

## Revisiting wildfire resilience from a territorial perspective : insights from Mediterranean Spain

Journal of Environmental Planning and Management

Rodríguez Fernández-Blanco, Carmen; Muys, Bart; Winkel, Georg; Parra, Constanza

<https://doi.org/10.1080/09640568.2024.2342333>

This publication is made publicly available in the institutional repository of Wageningen University and Research, under the terms of article 25fa of the Dutch Copyright Act, also known as the Amendment Taverne.

Article 25fa states that the author of a short scientific work funded either wholly or partially by Dutch public funds is entitled to make that work publicly available for no consideration following a reasonable period of time after the work was first published, provided that clear reference is made to the source of the first publication of the work.

This publication is distributed using the principles as determined in the Association of Universities in the Netherlands (VSNU) 'Article 25fa implementation' project. According to these principles research outputs of researchers employed by Dutch Universities that comply with the legal requirements of Article 25fa of the Dutch Copyright Act are distributed online and free of cost or other barriers in institutional repositories. Research outputs are distributed six months after their first online publication in the original published version and with proper attribution to the source of the original publication.

You are permitted to download and use the publication for personal purposes. All rights remain with the author(s) and / or copyright owner(s) of this work. Any use of the publication or parts of it other than authorised under article 25fa of the Dutch Copyright act is prohibited. Wageningen University & Research and the author(s) of this publication shall not be held responsible or liable for any damages resulting from your (re)use of this publication.

For questions regarding the public availability of this publication please contact [openaccess.library@wur.nl](mailto:openaccess.library@wur.nl)



## Revisiting wildfire resilience from a territorial perspective: insights from Mediterranean Spain

Carmen Rodríguez Fernández-Blanco, Bart Muys, Georg Winkel & Constanza Parra

**To cite this article:** Carmen Rodríguez Fernández-Blanco, Bart Muys, Georg Winkel & Constanza Parra (13 May 2024): Revisiting wildfire resilience from a territorial perspective: insights from Mediterranean Spain, Journal of Environmental Planning and Management, DOI: [10.1080/09640568.2024.2342333](https://doi.org/10.1080/09640568.2024.2342333)

**To link to this article:** <https://doi.org/10.1080/09640568.2024.2342333>



View supplementary material [↗](#)



Published online: 13 May 2024.



Submit your article to this journal [↗](#)



Article views: 57



View related articles [↗](#)



View Crossmark data [↗](#)



## Revisiting wildfire resilience from a territorial perspective: insights from Mediterranean Spain

Carmen Rodríguez Fernández-Blanco<sup>a,b,\*</sup> , Bart Muys<sup>b</sup> , Georg Winkel<sup>c</sup>  and Constanza Parra<sup>b</sup> 

<sup>a</sup>Governance Unit, European Forest Institute, Bonn, Germany; <sup>b</sup>Department of Earth and Environmental Sciences, KU Leuven, Leuven, Belgium; <sup>c</sup>Forest and Nature Conservation Policy Group, Wageningen University and Research, Wageningen, the Netherlands

(Received 21 April 2023; final version received 7 April 2024)

Wildfires are increasingly recognized as a complex socioecological phenomenon, yet their linkages with territorial development are not clearly spelled out. This article seeks to unveil the sociopolitical and sociospatial ramifications of wildfires by framing them as a territorial issue, and understanding fire-prone territories as dynamic entities that emerge in essentially political processes, defined by socioecological relations that unfold across different spatial and temporal scales. Against this backdrop, building resilience is considered a territorially embedded and continuous process, driven by mechanisms operating “behind the flames.” By operationalizing this framework in the region of Valencia (Spain), it is shown how social innovation can help overcome lock-ins and enhance resilience. This research showcases the importance of building a trusting, collaborative culture across sectors and actors, and brings to the forefront the importance of considering rural–urban relationships for reducing territorial inequalities and building more resilient futures in Mediterranean, fire-prone territories.

**Keywords:** wildfire; fire-prone territory; socioecological resilience; framing; Mediterranean

### 1. Introduction

Wildfires are a common disturbance in Mediterranean territories and are not new to human communities (Darques 2015; Pausas and Paula 2012). However, increasing wildfire risk is generating social unrest in these areas, due to the threats they pose to ecosystems, humans and assets (Doerr and Santín 2016; Górriz-Mifsud, Burns, and Marini Govigli 2019; Wunder *et al.* 2021). The socioecological nature of wildfires is increasingly being acknowledged within the scientific literature (Fischer *et al.* 2016; Tedim, Leone, and Xanthopoulos 2016; Wunder *et al.* 2021). Research establishing connections between wildfires and other territorial challenges within Mediterranean Europe, such as land abandonment, rural economic decline, biodiversity loss or climate change is also on the rise (Brotons *et al.* 2013; Halofsky, Peterson, and Harvey 2020; Lelouvier *et al.* 2021; Pausas and Paula 2012). However, the examination of wildfire-related problems in relation to broader territorial development drivers remains underexamined (Moritz *et al.* 2014), especially in relation to the sociospatial distribution of material and non-material goods shaping fire-prone territories (Cary 2023).

---

\*Corresponding author. Email: [carmen.rodriguez@efi.in](mailto:carmen.rodriguez@efi.in)

Such underrepresentation of the sociospatial sciences in wildfire studies, particularly in the European Mediterranean context, has left critical political questions unattended, such as economic drivers of vulnerability, the role of power, equity and multiscale socioecological relations in the negotiation of territorial development pathways (Marin 2021; Weichselgartner and Kelman 2015).

This article aims at unveiling the sociopolitical and sociospatial ramifications of wildfires. It does so by revisiting the concept of socioecological resilience from a territorial perspective, for which the concept of territory<sup>1</sup> is mobilized, as commonly used by human geographers (Amat 2003; Barreteau *et al.* 2016; Boelens *et al.* 2016; Del Biaggio 2015; Raffestin 2011) to explore the nature and role of socioecological relations in producing fire-prone territories, and what these entail for building socioecological resilience (SER). By defining fire-prone territories as the materialization of socioecological relationships that shape and co-evolve wildfire regimes at multiple spatial and temporal scales, this article emphasizes that fire-prone territories are not only defined by their wildfire incidence, but also by many other interrelated societal cum ecological processes that co-shape these territories, and therefore co-determine their fire risk. By bridging this conceptualization of fire-prone territories to the notion of SER as developed in Rodríguez Fernández-Blanco *et al.* (2022), a theoretical approach is developed to qualitatively assess the mechanisms that may be holding back and/or prompting SER with a particular emphasis on the sociopolitical dimension. This approach is applied to the analysis of the region of Valencia (Spain), which is a typical case of a Mediterranean, fire-prone territory suffering from water stress (Estrela, Peñarrocha, and Millán 2000) and heavy economic imbalances between coastal areas with intense tourism pressure and landlocked rural areas suffering from depopulation and economic decline (Baños *et al.* 2019). This article may be the first attempt to investigate socioecological resilience dynamics in the region drawing on the theoretical concept of territory. Thereby, the broader sociopolitical dimensions of fire-prone territories are considered in more depth (Boelens *et al.* 2016; Neale, Zahara, and Smith 2019). In doing so, an alternative framing of the wildfire problem is suggested, which this article refers to as a *territorial* framing. This opens a wider set of possibilities for building resilient fire-prone territories, paving the way towards more socially and environmentally just territorial development pathways.

## 2. A territorial perspective to wildfire resilience

### 2.1. Wildfires as a territorial process

Problem framing refers to how a problem is delineated, and which solutions are put forward (Bosomworth 2015; Chipangura, Van Niekerk, and Van Der Waldt 2017). Historically, wildfires in the Mediterranean have been framed and dealt with as ecological disturbances. However, as the threat to human lives and assets grows, it is increasingly being dealt with as a civil protection issue (Harrison *et al.* 2021; Xanthopoulos *et al.* 2020). In most fire-prone regions, wildfire governance still relies on so-called simple risk approaches (Essen *et al.* 2022), which are rooted in risk management and rational choice assumptions seeking to minimize the costs associated with hazards. Simple risk approaches tend to reduce complexity, assuming that there is an ideal formula through which technical solutions can be implemented by a central authority or body of experts (Essen *et al.* 2022; Scott 1998). These framings also tend to belie interactions and outcomes among different factors and actors, particularly when those are distant in space

and/or time. One example of this would be the underlying causes of unequal vulnerability to wildfires, which often materialize in distant temporal and spatial scales (Weichselgartner and Kelman 2015). In this way, the inherently political dimension of wildfire management is side-lined – rendering it a technical issue only.

To overcome the above, we suggest framing wildfires as *territorial processes*. This means to explicitly acknowledge that wildfires and wildfire regimes do not occur in a vacuum, but rather, that they are the product of multiscalar dynamics and arrangements (sociopolitical, economic, ecological) that produce the fire-prone territories of which they are part. Fire-prone territories are also shaped by their fire regimes, which, in turn, are characterized by the type and quantity of fuel (vegetation) that burns, the frequency, the intensity, the seasonality and the spatial distribution of wildfire events (Gill and Allan 2008; Harrison *et al.* 2021). Additionally, there is increasing evidence of how fire regime changes are closely tied not only to biophysical variables, but also to social, economic, institutional and political ones such as land-use dynamics, policy and organizational changes (McLauchlan *et al.* 2020; Pausas and Keeley 2019; Pausas and Paula 2012). Therefore, it is argued that a territorial framing helps to scrutinize more carefully *how* and *why* fire-prone territories emerge and evolve in the way they do, as well as which actors, institutions, path-dependencies and power dynamics are operating “behind the flames.”

## 2.2. Defining fire-prone territories

The concept of fire-prone territories is rather common in wildfire research (Duane *et al.* 2022; Leone *et al.* 2020; Molina and Galiana-Martín 2016; Moreira *et al.* 2023; Platt *et al.* 2022; Pulido *et al.* 2023). However, it is rarely linked to the rich literature that human geographers, along with other sociospatial scholars, have produced around the concept of territory. These social science traditions are highly relevant for wildfire research, not only because they have the society-nature nexus at their core but also owing to the attention they pay to spatio-temporal and societal dynamics (Barbier and Hamma 2021; Del Biaggio 2015; Pachoud, Koop, and George 2022; Raffestin 2011; Sack 1986). More common in wildfire literature is the conceptualization of fire-prone territories as socioecological systems (SESs) (Copes-Gerbitz, Hagerman, and Daniels 2021; Dunn *et al.* 2020; Vigna *et al.* 2021). This perspective, rooted in ecology and systems thinking, considers the natural resource base as the space where users and other stakeholders operate (Barreteau *et al.* 2016; Li *et al.* 2023; Ostrom 2007; Talubo, Morse, and Saroj 2022). The SESs concept, however, has been criticized for its limited capacity to critically examine and question processes of structural change and power imbalances (Cote and Nightingale 2012; Garcia *et al.* 2022; Kaika 2017; Meerow and Newell 2021), as well as for overlooking the interests of more marginalized sectors or regions (Biggs *et al.* 2021; Ingalls 2017). In this article, fire-prone territories are defined drawing upon these two concepts, therefore, mobilizing the longer history of dealing with power relations and socioeconomic dynamics of the concept of territory (Altschuler 2013; Boelens *et al.* 2016; Pachoud, Koop, and George 2022) with the analytical power of SESs, particularly when it comes to combining insights from the natural and social realm<sup>2</sup>.

Linking both perspectives, we define fire-prone territories as a spatiotemporally specific materialization of dynamic social and ecological relationships that play out at multiple spatial and temporal scales. This multiscalarity means, and paraphrasing Massey (1991), that a large proportion of those relations are in fact constructed in

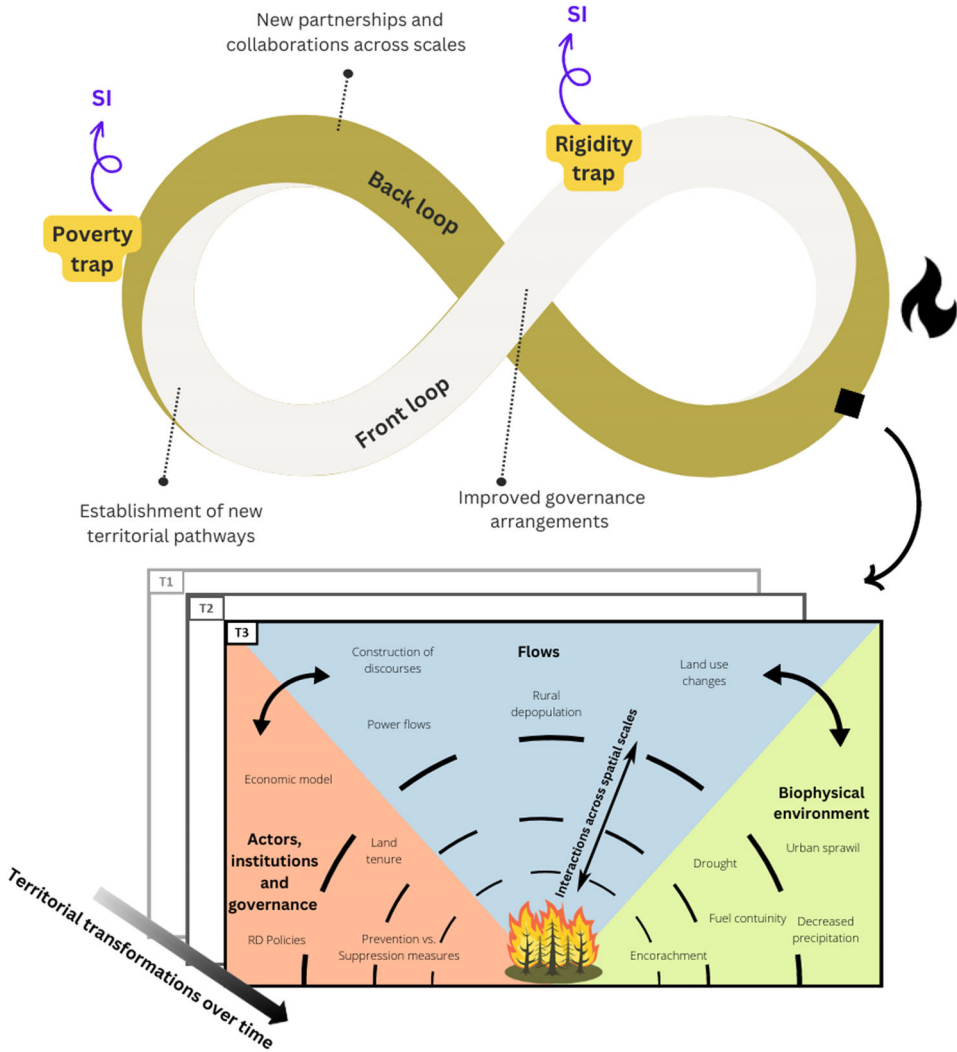


Figure 1. The process of building socioecological resilience in fire-prone territories (rectangles below, inspired by Méndez (2012)), which move along the adaptive cycle (infinity loop, above), as represented by the black square. After a wildfire event, a territory capable of building resilience triggers processes of learning, innovation and reconfiguration of social and socioenvironment relations (back loop). When a fire-prone territory has sufficient material and non-material resources, it can overcome the poverty trap and enter into a more stable phase (front loop). More stable phases allow the establishment of alternative territorial pathways that are more democratic and just, and that are ultimately more socially and environmentally sustainable. For avoiding the rigidity trap, fire-prone territories need to remain socially innovative, in order to be sensitive and capable of adapting in the face of revealed needs and vulnerabilities at each territorial scale.

larger spatial and temporal frames than what a fire-prone territory *is* at a particular moment. Such relations entail the plurality of societal groups, institutions, and ecosystems, as well as the flows across space of both material and non-material resources, which co-evolve with specific wildfire regimes, and are mediated by specific governance dynamics and arrangements. The bottom part of Figure 1 depicts how a territory

in its current state (T3) is the product of the legacy of past socioecological relationships (T2, T1) and across spatial scales. This means that territories are not necessarily compact spaces delimited by administrative borders, but rather porous groups of socioecological relations across actors within the public, private and third sectors and their biophysical context. These socioecological dynamics can be understood as “flows” or exchanges of either material (i.e. carbon, water, capital) and non-material elements (power, knowledge, energy). Any given territory is a materialization of these socioecological flows. A typical example of a Mediterranean European territory would be the relationship of competition between agricultural spaces and urban sprawl. In coastal areas, for example, urbanization and an expanding third sector economy often thrive at the expense of declining vegetation cover and primary sector activities (Melo 2020).

From an SES perspective, the distinction between social and ecological factors is to some extent “arbitrary” (Berkes, Folke, and Colding 1998): a wildfire can be initiated by either humans or nature (lightning), and its burning and spread pattern responds to the laws of physics and chemistry. However, the material configuration of the space where they burn (e.g. fuel type and distribution, land uses) is dependent on both biophysical (e.g. topography, climate) and socioeconomic arrangements (e.g. traditional practices, food systems, governance, policies) that are in place. Thus, fire-prone territories can also be understood as an “appropriation” of space (Elden 2010; Pachoud, Koop, and George 2022). Through (competing) land uses, economic transformations, interactions and exchange of material and non-material mediated by existing sociopolitical and power relations (Raffestin 2011). Thus, territories are constantly produced and re-produced over time, reflecting past and present socioecological relations, ranging from changing values and ecological dynamics to varying power balances and evolving governance dynamics and arrangements at multiple spatial scales (Boelens *et al.* 2016; Pachoud, Koop, and George 2022).

Our definition understands fire-prone territories as dynamic entities, which are the product of historical legacies (Nieto-Romero *et al.* 2019) and in which social relations, power and value systems are not external to but rather a constituent part of fire-prone territories (Cote and Nightingale 2012; Tedim, Leone, and Xanthopoulos 2016). In fact, territorial inequalities can also arise from competing values, for instance when different groups with unequal decision-making power frame wildfires differently. The material outcomes will likely be the result of the solutions put forward by the dominating frame (Buizer and Kurz 2016; González-Hidalgo, Otero, and Kallis 2014; Walker, Reed, and Fletcher 2020). If not scrutinized, dominant narratives can potentially hide the political component of wildfire governance and management, by obscuring alternative framings, interests and narratives. In this sense, our definition of fire-prone territories helps to unveil the nexus between power, knowledge and discourses, as well as their roles therein (Barnaud *et al.* 2021). In doing so, this work contributes to re-politicize the wildfire issue. Bringing back the wildfire conversation to the political arena is key for advancing SER, since the negotiation of alternative territorial pathways and questioning of the *status quo* is a key element of the learning and adaptation process (Bosomworth 2018, 2015; Pachoud, Koop, and George 2022). Such processes affect a myriad of stakeholders and involve tackling sensitive matters, which ultimately makes it a political discussion (González-Hidalgo, Otero, and Kallis 2014). The next section further elaborates on how the resilience building process occurs in fire-prone territories, and how it may be enhanced and/or hindered by factors which may not be directly affecting wildfire occurrence (see Figure 1). It also brings to the fore how social



innovation, understood as the reconfiguration of social relations and governance arrangements, contributes to resilience building. In this sense, it is important to highlight how sociopolitical dynamics are an integral part of governance systems, which may be broadly understood as the complex system of regulation involving the interactions of all actors and institutions, as well as all types of socioinstitutional arrangements at different territorial levels (Parra 2010, 491).

### 2.3. *Building socioecological resilience in fire-prone territories*

Resilience approaches are commonplace in wildfire research, and in dealing with SESs, the concept of socioecological resilience (SER) is mainly mobilized (Nikinmaa et al. 2020). This article defines SER drawing from resilience and social innovation literature, in an effort to consider the sociopolitical dimension of wildfires on an equal footing to biophysical aspects. Thus, SER in fire-prone territories is understood as the capacity to adapt or transform in the face of changing socioeconomic or environmental conditions in order to satisfy human needs and enhance societal wellbeing (Folke et al. 2016; Rodríguez Fernández-Blanco et al. 2022).

SER is conceptualized as a continuous process, which may be represented through the adaptive cycle (See Figure 1) (Fath, Dean, and Katzmaier 2015). The adaptive cycle, with its “∞” shape, helps to grasp the idea of how territories are in constant change, and how activities at any point are actively shaping how the system, or in our case, how the fire-prone territories, evolve and “prepare” for the next wildfire. The work by Biggs, Westley, and Carpenter (2010) also shows how social innovation allows springing out of the lock-ins that limit the system’s capacity to support societal well-being, which includes revealing and satisfying material and non-material needs (Girão Rodrigues de Mello et al. 2020; Mehmood and Parra 2013; Méndez, Fajardo-Ortiz, and Holzer 2022). Within this research, SI is understood as changes in social relations and/or governance arrangements resulting in enhanced societal wellbeing (Moulaert et al. 2013; Spijker and Parra 2018). In this regard, this work aligns with other authors claiming that SI approaches are needed for addressing complex environmental issues such as wildfires (Biggs, Westley, and Carpenter 2010; Marini Govigli et al. 2022; Moore and Westley 2011). Social innovation in governance, for example, favours careful consideration of the specific societal needs of the territory being “governed,” which includes not only wildfire risk reduction (Gonzalez-Mathiesen, Ruane, and March 2021) but also more participatory policy-making and sociopolitical empowerment across geographical regions (Galego et al. 2022; Mehmood and Parra 2013; Moulaert et al. 2013).

Once a disturbance such as a wildfire occurs, (resilient) territories trigger processes of re-organization, learning and innovation (i.e. by mainstreaming SI initiatives) to produce a “more desirable” improved version of this territory. The “poverty trap” is the incapability of a territory to foster these processes due to limited resources – either material (lack of financial resources) or non-material (lack of knowledge) (Moore and Westley 2011; Radosavljevic et al. 2021). In Mediterranean fire-prone territories, this materializes in the way in which rural exodus and land abandonment lead to natural forest regeneration, thus, increasing wildfire risk (Mantero et al. 2020). When a disastrous wildfire occurs in these rural areas, depopulation processes speed up, leading to further land abandonment and creating a negative feedback loop (P.F., personal communication, 15 July 2021). A resilient territory, however, would find the way to move



past the post-crisis stages (back loop) into a “new normal” (front loop) that better fulfils societal needs. At this stage, territories able to adapt and follow socially innovative strategies (i.e. bottom-linked models or participatory approaches) are key for bringing about improved governance arrangements to the table for wider society (Castro-Arce 2022). Resilience thinking describes these governance systems as “adaptive” (Abrams *et al.* 2021; Folke *et al.* 2005). And research in fire-prone territories points to this type of governance as crucial for integrating heterogeneous perceptions and framings around wildfires, institutional learning and increased trust levels within communities and for ensuring a smooth articulation of actors across scales, increasing the possibilities of mainstreaming strategies that can better satisfy the needs of all (Abrams *et al.* 2015; Uyttewaal *et al.* 2023; Van Niekerk 2014). This has been linked with flexible institutional structures as well as with the existence of a mobilized civil society capable of questioning the status quo, which further reinforces the role of SI in the resilience-building process (Castro-Arce and Vanclay 2019; Rodríguez Fernández-Blanco *et al.* 2022). Informal working collaborations have also been signalled as key for building SER within disaster scholarship (Tangney *et al.* 2023).

The creation of such governance systems also helps to overcome the so-called “rigidity trap” that is linked to inflexible, highly connected and homogeneous systems and results in reduced institutional innovation capacity (Meijering, Abcouwer, and Takács 2021; Moore and Westley 2011). In this regard, a territorial perspective to SER also contributes to a clearer focus on “general” resilience in the face of highly visible and specific disturbances such as wildfires, but also in a context of increased uncertainty. This tension between “general” and “specified” resilience has been described by resilience scholars (Carpenter *et al.* 2012; Walker and Westley 2011; Yu *et al.* 2020), who warn against focusing too much on building specified resilience (i.e. to a specific shock, such as wildfires). This is particularly relevant for extreme events or when there is a context of high uncertainty, as the one we are currently experiencing due to unknown climate change impacts (Carpenter *et al.* 2012) and which is known to have a significant effect on wildfire activity.

By applying this territorial understanding of socioecological resilience to the analysis of fire-prone territories (as defined in 2.2), this article brings to light the different territorial dynamics and socioecological elements that are effectively hindering or enhancing the resilience building process.

### 3. Methods

#### 3.1. Valencia: a typical Mediterranean, fire-prone territory

The term “Valencia” may refer to different geographical areas, and it varies between everyday languages. Strictly speaking, “Valencia” is the name of the capital city of the Valencian Region, and of one of the three provinces in which it is divided. Important for this research are also the less-known functional areas defined in the Territorial Strategy, which are supra-municipal administrative units, which are used mainly for planning purposes. The functional area where the qualitative data collection was gathered is also named “Valencia,” as it includes the capital city of the region (Figure 2).

This functional area is highly diverse and includes both rural, landlocked areas, with some very small towns at a high risk of depopulation, as well as urban, coastal ones. In this area, the influence of the city of Valencia has been expanding inland due to the need for industrial land and because of housing shortages (Hermosilla 2019).

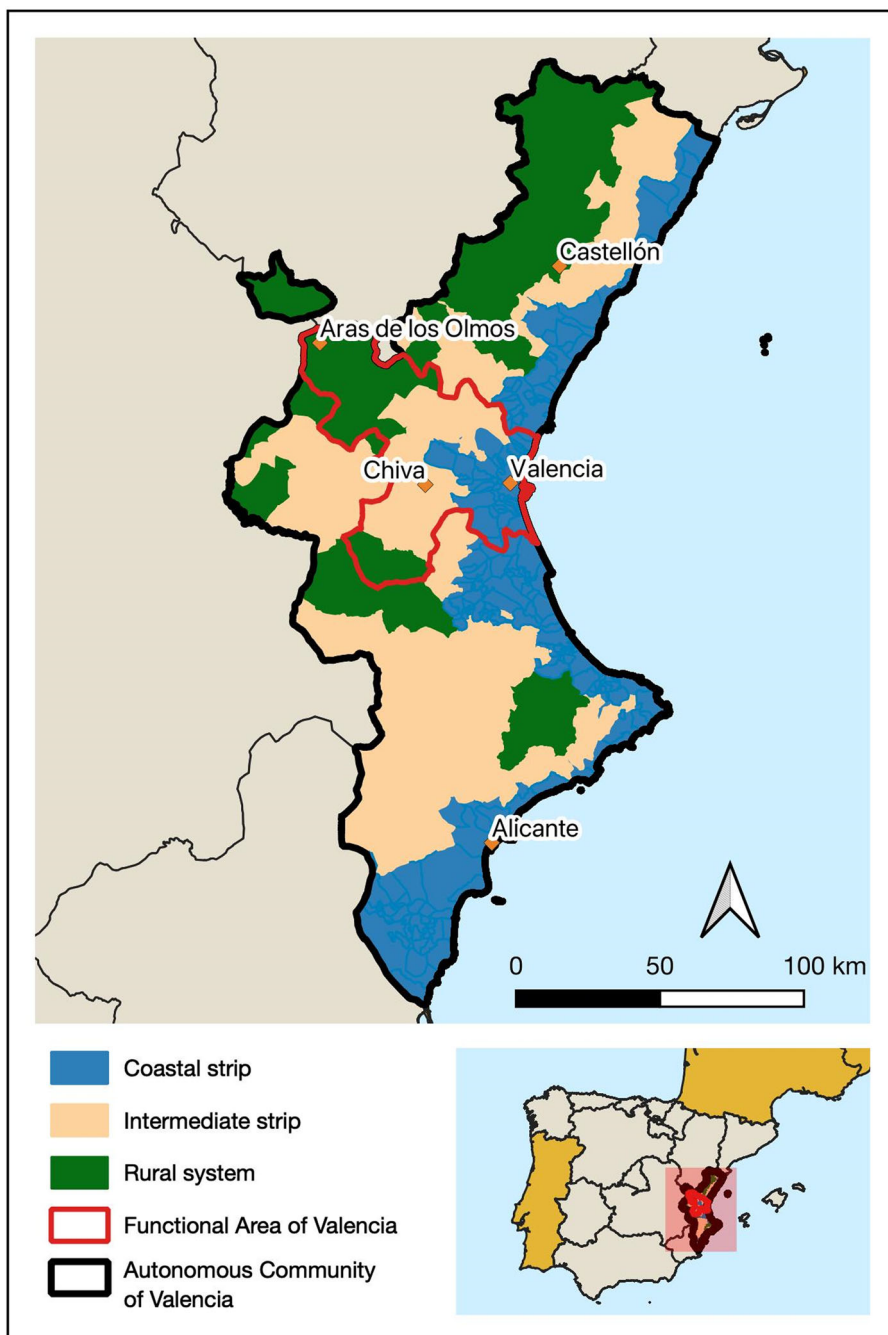


Figure 2. Map of the Valencian Region with the Functional Area of Valencia (red line). In blue: Coastal strip. In yellow: Intermediate strip. In green: Rural system. Source: Authors, elaborated with data from the Valencian Cartographic Institute. Colour online.

This duality illustrates the different territorial realities within the region and showcases the network of socioecological relations along the rural–urban gradient, which in Valencia is equivalent to a “landlocked- coastal” gradient (Ruíz Martínez and Esparcia

Pérez 2021). Nearly 50% of the area is classified as forest land, whereas 41.2% is devoted to agriculture and 8.3% is urban land. These numbers contrast with employment numbers, for which 97.4% of the people work in the tertiary, industrial or construction sector, against the 2.6% working in agriculture and forestry (GVA 2011). In terms of ownership, 55.2% of forest land is private, 38.6% is public and there is a 6.2% for which the ownership is unknown (Conselleria de Medi Ambient 2023).

The Valencia functional area includes the three major “spheres” defined by the Territorial Strategy, namely: coastal strip, the rural system, and the intermediate strip. These spheres are useful for understanding the Valencian territory in socioeconomic terms. The coastal strip sustains 81.6% of the population and 85% of the GDP, although it only represents 25.7% of the total area. On the other end, the rural system sustains only 1.5% of the population and 2% of the GDP, while representing 31.6% of the total area. Here, the agriculture is mainly rain-fed, and processes of land abandonment are prominent (GVA 2023). In the middle, the intermediate strip hosting the intermediate cities holds 17% of the population and 13% of the GDP, even though it is the biggest in terms of surface area, representing 42.7% of the total. Economically, in the coastal strip, the third sector dominates (mainly tourism) and irrigation agriculture. In the intermediate strip, agriculture is mainly non-irrigated and the industry is more important; whereas in the rural system the smallest villages are found, several of which face important depopulation issues and where most of the population lives off a combination of third sector and agricultural activities (Muñoz Criado and Domenech Gregori 2012).

The functional area of Valencia, like the rest of the Valencian region, is classified as being at high wildfire risk (GVA 2017). Spatial studies have shown how most wildfires affect inland and central areas, where the landscapes are dominated by abandoned land and *Pinus halepensis* Mill (Zambon *et al.* 2019). The annual area burnt over the last decades shows a slightly decreasing trend, with extreme values in 1994, 2012 and (predictably, as final data is not official yet), 2022 (GVA 2022).

### 3.2. Data collection and analysis

Our research followed a qualitative case-study research approach (Yin 2009). The case-study approach was chosen in light of the overriding goal of the article, which is to enrich and refine theoretical insights with in-depth knowledge of the empirical reality in a fire-prone territory (Luker 2008). For this purpose, primary data were collected through a series of 31 in-depth semistructured interviews with open-ended questions, allowing for a conversational style on the interviews (See Annex 2 [online supplementary material]). Interview guides were developed in light of the concepts presented in Section 2 (Kvale and Brinkmann 2007), with an emphasis on the sociopolitical elements; the goal was to explore their impact on the socioecological resilience of the fire-prone territory under study. The interview guides evolved through a reflective process in which both the theory and previously collected data were revisited after each interview (Srivastava and Hopwood 2009). Initially, two key actors operating in the science-practice interface of wildfires in the Valencian region were interviewed, to gain a first understanding of the context. They also acted as gatekeepers for other information-rich participants, and allowed the initiation of snowballing sampling, combined with purposive sampling (Patton 2002). The purposive sampling aimed at gathering insights from actors who tend to be less included in the “wildfire conversation”

but who are heavily involved in shaping the Valencian rural territory, such as shepherds, neo-rural inhabitants, rural development (RD) agents, researchers from different disciplines, as well as members of the agroecology movement, which is strongly rooted in the city and metropolitan area of Valencia but whose socioecological relations expand to peri-urban and rural areas. Interviews lasted an average of 1.5 h, were held in Spanish, and continued until reaching data saturation (Patton 2002). Thirty-one people were interviewed in total, either dealing with wildfires directly (firefighting service, workers of the fire brigades, forest owners, researchers) or indirectly (environmental NGOs, policymakers, forestry practitioners, mayors of rural areas).

Primary data collection was complemented and triangulated through a review of policy documents, local press, scientific research, and other grey literature which are referred to throughout the results section. Due to COVID-19 restrictions, interviews were held in a mixed online and in-person format. Among those that took place in-person, ten were carried out as walking interviews, in order to gain deeper insights on the territory under study. Ethical clearance was provided by KU Leuven's Social and Societal Ethics Committee under reference number G-2020-2655-R3(MAR). Interviews were transcribed and analysed using MAXQDA © software. As a first step, an inductive round of coding was carried out, followed by a second round, this time deductively, based on the concepts and analytical categories discussed in Section 2. In all stages of the analysis, results were reviewed and discussed between the primary researcher and coauthors, with the purpose of distilling the most relevant insights, and cross-checking for consistency, and correct interpretation of the data. Limited resources and potentially derived biases were partially overcome thanks to the pre-existing knowledge and familiarity of the first author with the Valencian context. However, and to further reduce potential biases, interviewees from both urban and rural settings were contacted for validation of preliminary results during the analysis.

#### **4. Results: Valencia as a fire prone-territory**

This section presents the key territorial dynamics shaping the fire-prone territory of Valencia. Core aspects are linked to the flows and interactions between biophysical and sociopolitical elements, including rural depopulation, territorial inequalities across the rural–urban continuum and governance approaches to conflicting interests and worldviews.

##### ***4.1. Wildfire risk and rural dynamics in modern Valencia***

The Valencia region is a land of smallholdings, particularly in the land-locked, mountainous areas (Cabanès Pecourt 1977; López García-Molins 2000). Both our literature review and interviews point towards a link between the low profitability of Mediterranean forests and low public investments, leading to low levels of forest planning and management. Additionally, depopulation leads to abandonment of extensive agricultural activities that trigger natural forest regeneration (Keenleyside and Tucker 2010; Martín Pardo 2015). Altogether, this results in an increased wildfire risk and difficulties for setting in motion land management strategies. This situation is, however, not exclusive to Valencia; it is largely present in European, Mediterranean forests (FAO and Plan Bleu 2018; Górriz-Mifsud *et al.* 2019). Against this backdrop, some initiatives of land consolidation (for the reorganization of parcels to make them

economically profitable) have been found, most of them oriented to recover agricultural activities (Conselleria de Agricultura, P. y A 1995). A firefighter summarized the needs of Valencia in terms of land management:

We have a very difficult situation. The first is the ownership of the land. The second is the need for technical plans, such as development plans. The third is the profitability that you are going to get from these products. (...) look at the state of this (the forest). This is like a match on a bad day. (VLC09)

Land management is an issue closely linked to rural depopulation, which has made it to the top of the Spanish political agenda. In Valencia, depopulation occurs in areas that are rather close to the coastal strip (50–60 km), where wealthier, highly urbanized, and densely populated areas are concentrated (Cuquerella and Giménez 2019; INE 2020). This contrast is the result of a period of rapid economic growth during the 1950s, 1960s and early 1970s, when the “sun and beach” tourism model was promoted (Perles-Ribes *et al.* 2018) and the traditional agricultural model dominating rural areas was in crisis (Esparcia and Noguera 1995). Consequently, 95.8% of the population lives in areas classified as urban<sup>3</sup> (Ruíz Martínez and Esparcia Pérez 2021) and forested areas virtually overlap with rural ones, creating an indivisible spatial link between rural and forest affairs, which is explicitly acknowledged in the Valencian Forest Strategy (Vaersa 2011).

In Valencia, the catastrophic wildfire season of 2022 increased the visibility of the linkages between depopulation and wildfires in the public discourse, channelled mainly through the movement “Revolt of the Empty Spain” (created in 2019 to give visibility to the needs of marginalized rural areas). They summoned demonstrations and a nationwide strike after the summer season, under the motto “Depopulation is the flame that burns our land” and asserting that “only living rural areas engaged in the management of their territories can carry out the task” (Revuelta de la España Vaciada 2022). In this sense, the movement is increasingly voicing the issues of inequalities between rural and urban areas, which some scientific literature has also pointed out (Cattaneo, Nelson, and McMenomy 2021; Muys *et al.* 2023; Urso 2021). This is also explicitly spelled out in policy documents such as the Valencian Strategy against Depopulation (AVANT), which attributes these imbalances to longstanding historical processes and ineffective rural development policies (Hermosilla Pla *et al.* 2021). However, territorial inequalities, (which underlie land abandonment processes and increased wildfire risk) are rarely discussed in the wildfire management and governance arenas. In contrast, this research found that public authorities were mostly concerned about the Wildland-Urban Interface (WUI), since these fires have the potential to affect more people and create more losses to houses and infrastructure (VLC17).

#### **4.2. The hierarchy between the coastal strip and the rural system**

The rural–urban imbalance examined above is closely linked to the highly heterogeneous orography of Valencia, which strongly conditions the spatial economic organization and related land management. In general terms, more profitable crops (irrigated, mainly citrus) occupy most of the land below 200 m, which roughly coincides with the coastal strip. In contrast, the rural system presents rain-fed agriculture that tends to be less profitable, leading to abandonment and encroachment (MAPA 2003). Furthermore, rural areas hold most of the nature protection efforts with 70% of Valencian Natura

2000 sites being located in rural municipalities (Conselleria de Medi Ambient, U. y H 2011a). Protected areas pose restrictions on economic activities (Rodríguez-Rodríguez and Vargas 2022) and reinforce the idea of “landlocked territories, protected territories” (Hermosilla Pla *et al.* 2021) which is a central complaint among forest owners. This research found how there is a generalized perception that considers rural areas as remote and natural, with high conservation, aesthetic and recreation values, and which have to “serve the needs” of the urban population while sidelining other uses that would be more beneficial to its inhabitants. One forest owner explained the difficulties that this poses, and how they must abide by many legal restrictions for which they are not compensated:

Sometimes up to 9 protection figures overlap on the same piece of land. Now, tell me how you manage to work or do something without infringing any of the regulations. (VLC27)

In this sense, the socioecological relationships established between the rural and coastal areas are seen as favouring urban needs to the detriment of those in the rural system. This hierarchical relationship is also visible in some regional policy documents such as the Valencian Territorial Strategy. Here, one of the planned goals for the functional area of Valencia is to develop “one of the biggest metropolitan areas at the European and global level.” As a consequence, rural areas are planned to be “service providers” for the metropolitan area of Valencia (GVA 2011). References to this phenomenon are rather scarce within the wildfire literature. However, in our interviews this appeared in terms of how wildfires were treated differently not necessarily depending upon the actual damage, but depending on where or to whom the damage was inflicted, as reflected in the quote below:

I always give the example of The Granadella. When the Granadella, the cove in Jávea [where many middle-upper class people from the capital city Valencia go on holidays], burnt down. Man, that was massive. But hell... Only four pine trees burnt there, compared to what a real fire is. But of course... Where? (VLC20)

Translated to economic terms, one interviewee framed the wildfire issue as an export of costs (as opposed to externalities) from cities to the rural world:

I spoke to you about what we (*urbanites*) extract from the rural world, but we also throw (*away*) a lot of things into the rural world. In other words, we dump costs, (we say that), but that is a lie. It is a clear export of costs. And that’s when the issue of fire was mentioned. (VLC14)

Away from the wildfire topic, but strongly present in the territory of Valencia, was the conflict around the clean energy transition, for which large-scale wind and photovoltaic farms are being deployed in rural Spain, often facing resistance from local communities (Andrés Durá 2023). These conflicts showcase particularly well how the rural interests seem to be often neglected when it comes to designing territorial development pathways, even when the industrial developments occur within municipal boundaries (TuComarca 2022).

The contrast in values between rural and urban lifestyles was highlighted by several interviewees. Specifically, the way of understanding environmentalism.

Rural inhabitants often shared a vision of the urban lifestyle as unsustainable and disconnected from nature in contrast to the rural one. In their view, the archetypical urbanite does not fully understand the natural world and the countryside. In the words of a rural inhabitant:

People clean the forest not only because of wildfires. I clean it because then I take the wood, I cook, I warm myself up (...). You take care of the animal because the animal offers you something. But I don't take the chicken, dress it up and kiss it good night before I put it to bed. You see these things in the cities and think – We've gone a bit overboard, haven't we? (VLC05)

Interviewees in rural areas rarely described the wildfire issue in an isolated way, but rather emphasized how it was intertwined with land abandonment. Conversely, RD experts and forestry technicians did refer to fires more specifically, either because it was their field of expertise or because they were not familiar with the issue. In this sense, there seems to be a rather strong disconnect between the epistemic communities of RD and those of wildfire, despite the close relationship between rural depopulation and increased wildfire risk found in the literature (Nunes *et al.* 2021; Uyttewaal *et al.* 2023). Data showed how their professional networks only seldomly shared spaces (e.g. projects, conferences, etc.), and rarely collaborated with each other, even in cases where they belonged to the same institution (e.g. university), as reflected in the quote below by a RD expert:

There must be some work done (on wildfires), but I have not done any review on it. It would be interesting if you could check whether there is any work linking land abandonment with wildfires. (VLC15)

This very “siloe” landscape of epistemic communities, as well as the contrast between the rural and urban “worlds,” is also reflected in the governance system, as further discussed below.

#### 4.3. *Governing dissensus*

Understanding governance systems entails understanding the rules and regulations that are established, but also the different actors and institutions that are involved, the social relationships and power dynamics that exist, as well as the worldviews that underpin actions (Duit *et al.* 2010). In this sense, there appeared to be a consensus about how urban-oriented the policymaking is:

There is a problem that is the basis of everything, and that is who makes the policy. Politics is made by politicians (...) and in a territory like Spain, they have their ecological niche in urban areas, which is where the people who vote for them live. So, making policies gets them recognition, but solving the problem is much more complex. (VLC09)

In examining how the fire-prone territory of Valencia is governed, one of the most salient aspects is its high complexity and rigidity, which was repeatedly stated not only by interviewees, but also by policy documents, such as the Valencian territorial strategy: “...(territories) require forms of territorial management that are not well



reflected in traditional, excessively bureaucratic and hierarchical administrative structures” (Conselleria de Medi Ambient, U. y H 2011b). These excessively rigid bureaucratic structures are common in Southern Europe and have been linked to uneven distribution of personnel and a formalist tradition leading to over-production of regulations and norms (Sotiropoulos 2004).

Particularly relevant for wildfires is what this means for public officials, given that wildfire prevention and suppression are both competences of the regional government, with many overlapping competences with provincial governments and where subcontracting is commonplace. Wildfire prevention experts explained how the complex institutional setup made their job more difficult: “If we are not even clear on the organizational chart, how can one imagine it to work?” (VLC17).

They also described how it hindered the development and implementation of innovation in terms of wildfire governance and management due to a high compartmentalization of competences. Moreover, this compartmentalization also seemed to create a tense environment rather than a collaborative one among agencies dealing with wildfires, in which all agencies have different, yet overlapping, competences. In addition, interviewees also suggested that, in some cases, tensions were connected to conflictive personal relationships among individual actors with a certain degree of decision-making power, which in turn hindered the development of certain activities. However, interviewees preferred not to report on the more sensitive aspects of these conflicts: “Yes, testosterone is criminal, let’s leave it at that” (VLC17).

Linking formal and informal institutions, a salient aspect that arose was the great distrust that local environmentalist movements showed towards the forest administration. They described it as outdated and as a continuation of old school ideas of the (now extinct) ICONA<sup>4</sup>.

For us it is nothing more than the continuation of the old ICONA, which was transferred to the autonomous region in the 80s (...) but there was a very clear continuity of everything. (VLC28)

Forestry technicians and firefighters, for their part, claimed how environmentalists still thought about the forest administration “in terms of ICONA,” and their incapability to update their frames of reference:

They [environmentalists] are still against forestry management, against forest policy, understood as an old-fashioned policy of Franco’s ICONA ... All this is still in the air. (VLC09)

In the case of Valencia, however, this dichotomy cannot be reduced to the classical “forestry vs. environmentalism” dispute (Sotirov and Winkel 2016), since there seems to be a significant gap between the demands of local environmentalist groups and those operating at the national and international level. Whereas the latter share the diagnosis with the vast majority of the forestry and firefighting sector who call for more management (Castelló and Montagut 2019), local groups tend to hold more conservationist (i.e. “no management”) positions. These different approaches seem to expand beyond the wildfire realm and are rooted in different ways of understanding human–nature relationships, as explained by one rural inhabitant:

What is clear is that human beings have already altered the forest (...). So, now, leaving it abandoned and not managing it, we are generating serious problems of collapse. (VLC18)

In the aftermath of high-profile wildfire episodes, such as in 2022, this dissensus becomes more apparent and the public debate more heated (AE-Agró 2022; La Culebra No Se Calla 2022), and it often derives in governance changes (Rodríguez Fernández-Blanco *et al.* 2022). However, a close-up examination of the drivers of the evolution of the governance system is outside the scope of this study.

An important cornerstone for increasing trust across relevant actors is by increasing engagement and participation levels in decision-making processes. In Valencia, one of the most important participation mechanisms is the *Mesa forestal* [Forestry Board] created in 2013 as a platform for consultation and dialogue between the forestry administration and other stakeholders (including environmentalist groups). Furthermore, since 2016, after each wildfire of more than 500 hectares, the regional administration establishes the so-called *Mesas Post-Incendio* [Post-Fire Tables] that are meant to coordinate the post-fire measures jointly with local actors. However, interviewees report that these forums are poorly managed and have little decision-making power; in the case of the Forestry Board, they are not even summoned periodically (Vaersa 2011).

Finally, and as it happened with the disconnected epistemic communities introduced in 4.2, our research also shows the little attention that wildfires received from territorial planners and territorial planning in general, despite the power of wildfires to shape and modify the territory (Serra Davos, Plana Bach, and Cerdan Heredia 2019). As an example, the chapter dedicated to risks in the Valencian Territorial Strategy mentions wildfires only superficially and in a positive manner, linking it to a decrease in the average burnt area since 1994 (Conselleria de Medi Ambient, U. y H 2011c). This positive perspective contrasts heavily with the discussions in specialized wildfire forums, and even in the Valencian Strategy of Wildfire Prevention and Climate Change Adaptation – which portrays Valencia as the autonomous community in Spain that has suffered the largest proportion of wildfires over 500 hectares for as long as there are records, and shows a great concern for the evolution of wildfire behaviour in the near future (GVA 2017).

## 5. Discussion: implications for socioecological resilience

### 5.1. A territorial perspective to wildfires

The different discourses and problematizations of wildfires identified in Valencia align well with those identified in Catalonia (Castelló and Montagut 2019; González-Hidalgo, Otero, and Kallis 2014; Rodríguez-Carreras *et al.* 2014) and Andalusia (Bidegain *et al.* 2020) by previous studies, as well as with those identified on the wider issue of land abandonment in southern Europe (Frei *et al.* 2020). This illustrates how the framing of wildfires in Valencia is connected to the larger topic of land-use governance and management in Mediterranean Europe (Frei *et al.* 2022), as has already been discussed for other fire-prone countries such as Australia (Howitt 2014).

In this sense, our results also show a significant degree of conflict revolving around wildfires and the use of fire in the territory (Verdú López 2020), for which local NGOs strongly advocate for a firm “command and control” approach, including a rigid prohibition of the use of fire, and very little management intervention

(VLC28). Authors such as Vila Subirós *et al.* (2016) have referred to this as opposed land management approaches relying on ecocentric vs. anthropocentric worldviews.

This, in the absence of a strong social fabric and collaboration culture, is particularly damaging for the resilience-building process and prevents constructive interchange which could eventually lead to improvements in how territorial development is envisioned and governed. In this regard, González-Hidalgo, Otero, and Kallis (2014) point out that learning opportunities are missed when wildfires are devoid of political content and the debate is centred around individual responsibilities instead of being understood as a systemic issue.

Building on this, this research contends that a reframing of wildfires as a collective, territorial problem is key to showcase more clearly the links between wildfires and broader questions of sociospatial and economic nature over time and space. Making this connection explicit would contribute to a re-politization of the debate, contributing to signal how spatialized policies (planning, conservation policies, economic development, etc.) may be understood as mechanisms for “ordering, distributing and allocating people, things and functions to designated places” (Swyngedouw 2011), thus, determining how fire-prone territories emerge, create and deal with wildfire risk (Buizer and Kurz 2016).

In this sense, elements such as inclusive governance approaches or adaptive institutions have been described as key for materializing the actions just described and building SER (Koontz *et al.* 2015). This territorial framing shares similarities to what Essen *et al.* (2022) refer to as complex risk, insofar as it understands wildfires as a wicked problem requiring territorially embedded and socially just strategies.

On another note, the Valencian forestry sector is described as having a weak social fabric, which is sometimes extended to the rural world in general, as has been reported for rural regions in other countries such as Portugal (Canadas *et al.* 2023). This, in addition to the disconnection found with RD or agricultural/livestock epistemic communities, constitutes a missed opportunity for finding synergies across sectors, cross-fertilization of knowledge and the implementation of joint projects integrating wildfire risk. This can be interpreted as a poverty trap, insofar as it hinders the capacity of the territory to trigger social innovations that can bring about new alliances such as public–private partnerships, or joint projects across sectors (i.e. mainstreaming extensive grazing schemes for wildfire prevention) which are currently difficult to implement because they fall under the competences of different departments. Conversely, the highly rigid and bureaucratic procedures found within the public administration, which is a key element of the Valencian wildfire governance system, but also Southern European countries in general (Sotiropoulos 2004) constitute a typical example of a rigidity trap (Carpenter and Brock 2008), both of which reduce the overall resilience of the system (Cinner and Barnes 2019; Folke, Colding, and Berkes 2009; Haider *et al.* 2018).

Our data show how the collective imaginary differentiates very clearly between “the rural” and “the urban,” including the problematization of the wildfire issue. This further confirms findings by others such as Gordon *et al.* (2010) for Pennsylvania in the United States, or González-Hidalgo, Otero, and Kallis (2014) and Uyttewaal *et al.* (2023) for Catalonia in Spain. Such distinction goes well beyond wildfires and brings to the forefront rural inhabitants’ generalized perception of their needs going unheard by policymakers (see Section 4.2). Rural inhabitants expressed a feeling that wildfires affecting the material and/or non-material assets of wealthier or more urbanized sectors of society were taken more seriously by the public administration. This coincides, for

example, with findings from Catalonia, where effective political change only happened when the wildfire impacted the urban population to some extent (Rodríguez Fernández-Blanco *et al.* 2022). The claims from the “Empty Spain” movement further support this point, since they consider wildfires as a sign of the abandonment of rural areas throughout the country. In their words: “Now, we are not only the Empty Spain. Now, we are also the burnt Spain” (Diario de Burgos 2022). Whereas public officials, explained this in terms of population density, and argued how special attention is paid to those areas where more population can potentially be affected (i.e. urban ones), such a logic is not neutral. In fact, it has been pointed out by Valencian researchers as strongly political (Querol and Ginés Sánchez 2020) insofar as it prioritizes demographic criteria over territorial ones, resulting in significant territorial inequalities (Nova Ruralitat 2019), including uneven vulnerability to wildfires.

In terms of SER, this work suggests that such territorial inequalities constitute a hindrance for building resilience in fire-prone territories (Carpenter *et al.* 2012). This argument is based on two main points. From a normative perspective, it is contended that a territory that evolves in a way that reinforces the marginalization of some social groups cannot be considered resilient, since it is not able to guarantee societal wellbeing for all.

From a more analytical perspective, the rural exodus and related land abandonment entail challenges linked to the lack of activity in these spaces, such as the increase in landscape homogeneity (Otero *et al.* 2015) and loss of knowledge and biodiversity linked to autochthonous species (i.e. use of esparto grass, local cattle breeds) that are an important source of SER (Adger *et al.* 2005).

## 5.2. *Revealing needs, articulating actors*

One of the key contributions of social innovation to the resilience-building process is the capacity to reveal and address unmet territorial needs (Moore and Westley 2011; Moulaert *et al.* 2013). In this regard, a top concern among wildfire managers is risk awareness and the general population’s understanding of their own vulnerability. Our data suggested that interviewees are highly aware of the wildfire risk to which the Valencian territory is subject. Paradoxically, however, during most interviews (except those conducted with wildfire professionals), wildfire risk was rarely the first thing mentioned when asked about territorial challenges. In this sense, the rural population appeared to be more prone to link wildfires to broader socioeconomic challenges, and called for actions that would reverse the situation:

The main challenges (...) at least to maintain it [the population], because it is complicated to grow, but to create alternatives. And a bit of hope for young people to stay or return, (...) because if there is no young population, it is difficult to maintain everything. (VLC19)

In this sense, it is important to highlight that priorities may change across social groups regardless of their risk awareness. Therefore, the importance of building a strategic collaborative culture arises as key for connecting actors operating in different territorial scales, and therefore, for advancing SER in these areas. For example, this research found localities in which socially innovative strategies between the municipalities and universities contributed significantly to enhancing local capacities and establishing continuous learning processes (Klein *et al.* 2020), which are key for building SER (Biggs, Schlüter, and

Schoon 2015). These, however, appeared to be the exception rather than the norm in the Valencia region. It is hypothesized that disconnection across epistemic communities could be playing a role in missing out potentially innovative opportunities. Also, the limited collaboration culture found in the area could be hampering the creation of synergistic relationships in various forms (public, private or public-private partnerships). Altogether, these dynamics can significantly hinder the territory in building resilience and developing more sustainable territorial pathways. In this regard, not only is referring to the abovementioned lock-ins relevant but also to the limited engagement of the actors immediately concerned, which is a necessary element for creating inclusive environments and building SER (Masterson *et al.* 2017; Rodríguez Fernández-Blanco *et al.* 2022).

At this point, this article puts the spotlight on the demonstrated capacities of social innovation for dynamizing rural spaces, as shown by examples such as community-supported agriculture, time banks or women's cooperatives (SIMRA 2018) or protected areas (Castro-Arce *et al.* 2019), while contributing to societal well-being (Neumeier 2012; Ravazzoli *et al.* 2021). Whereas research on the potential of SI for reducing wildfire vulnerability is still limited (Górriz-Mifsud, Burns, and Marini Govigli 2019; Rodríguez Fernández-Blanco *et al.* 2022), the findings of this article suggest that fostering SI can help to overcome both poverty traps (i.e. *via* the strengthening of the social fabric, or the connection of different epistemic communities) and rigidity traps (i.e. by creating new alliances and collaboration opportunities that are conducive for innovation and learning) (Butler and Goldstein 2010). More specifically, a more effective functioning of already existing spaces for collective deliberation (Forestry Board, Post-Fire tables) has been identified in the literature as key for reducing wildfire risk at the community level (Gordon *et al.* 2010).

### 5.3. Territorial planning and governance systems

The importance of governance strategies that are well adapted to the territorial context is well-stated in the literature and is often referred to as “adaptive governance” (Boyd and Folke 2011; Cumming 2011). These should be able to create and/or mobilize existing networks for developing participatory decision-making (Galego *et al.* 2022). However, our research shows that the weak social fabric found in rural Valencia, along with the limited resources of rural municipalities, make this task rather difficult. Additionally, in dealing with the wildfire issue, there is a strong, delocalized “top-down” governance approach, for which “if a private forest burns, it is because the owner did not take appropriate measures.” This perspective is problematic, as it renders wildfires as a matter of individual responsibility and liability only, thus oversimplifying its territorial ramifications, historical construction and linkages to wider development issues. Even disciplines with a traditional individual-centred perspective, such as environmental psychology, highlight the importance of addressing complex challenges from a collective perspective (Barth *et al.* 2021). Alternatively, problematizing wildfires as a territorial problem, as explained above, would also help to bring together sectors that are currently disconnected but whose activities heavily affect the existing wildfire regime and sociospatial and biophysical configurations (i.e. territorial planning, agriculture, forestry or rural development). Doing so would contribute to opening up innovative pathways to reduce wildfire vulnerability and wildfire risk, while increasing SER at the territorial level (Cerdan 2002; Davos, Bach, and Heredia 2019; Serra Davos, Plana Bach, and Cerdan Heredia 2019).

Another key aspect for building SER is the issue of trust (Tangney *et al.* 2023), cohesiveness of communities and the capacity of the governance system to adapt to and actively shape the desired territorial realities (Folke *et al.* 2005; Moulaert *et al.* 2019; Van Dyck and Van den Broeck 2013). In the case of Valencia, two aspects hindering the improvement of such governance were found. On the one hand, the strongly polarized positions between local environmentalist movements and forestry/firefighting officers hampered the establishment of collaborations across sectors and scales, which could also be described as a rigidity trap. On the other hand, the weak articulation that exists among forestry actors in Valencia (partly linked to the low economic profitability) leads to limited socioeconomic dynamism in the sector, and therefore, to a scenario in which local initiatives linked to forest management and/or wildfire prevention are virtually non-existent, therefore, limiting the possibilities for experimentation and SER (Nelson, Adger, and Brown 2007). This contrasted heavily with the number of collaborative initiatives (both public and private) that were found around the food and agroecology networks, largely around the city of Valencia. Given the high importance awarded to both depopulation and wildfires in the political agenda, it is argued that present times confer a unique momentum for linking the two issues in practice, by integrating further these two epistemic communities and implementing joint action.

## 6. Conclusion

This article puts forward a territorial framing for the wildfire issue that highlights how wildfires are intertwined with other socioecological and spatial dynamics such as territorial planning, economic development or land tenure, and how these shape fire-prone territories. Building upon this idea, fire-prone territories are defined, borrowing from the SES framework and the sociospatial sciences, and understood as the outcome of negotiations between diverging visions and interests held by different groups with unequal capacities and decision-making power, intertwined with a dynamic biophysical environment that brings about a specific wildfire regime. By assessing the SER of the functional area of Valencia from this standpoint, the relevance of the sociospatial ramifications of the wildfire issue come to light.

Our case study shows how worldviews held by rural inhabitants are largely underrepresented in existing policy frameworks, and how grassroots movements from rural areas are increasingly identifying wildfire disasters as a symptom of their neglect by the public administration. Understanding that SER is linked to the capacity to adapt or transform for better meeting societal needs, this research questions whether territories showing these imbalances can be considered resilient. This further highlights the relevance not only of adaptive and flexible institutions, but also of inclusive ones, which can negotiate and implement decision-making processes that do not reproduce sociospatial inequalities.

A close examination of relevant actors operating in the fire-prone territory in the Valencia region also brought to the forefront a significant disconnection between epistemic communities around wildfires and related policy areas (i.e. RD, food systems and agriculture), which significantly hinders cross-sectoral learning and innovation. Additionally, in understanding SER as a collective, territorial endeavour, personal animosities are found to be a relevant obstacle for implementing preparedness or adaptation measures, particularly when these occur among people with some decision-making power. However, due to the sensitivity of the issue usually these go under the radar. These two aspects add nuance to the literature highlighting the importance of cooperation and trust in

the resilience-building process. In terms of governance, this article presents evidence on how excessively specialized and rigid institutions reduce resilience by creating rigidity traps, and how the existence of spaces of participation is not a sufficient condition for weaving a strong social fabric, but that these need to be activated and dynamized.

This article presented a conceptualization of fire-prone territories as the product of multiscale social and ecological interactions over time and space. Building upon such an understanding, a territorial framing for wildfires was put forward, and subsequently, for the resilience-building process, allowing further unpacking of the underlying socio-spatial relationships. This highlighted the need for further consideration of sociopolitical and territorial development dynamics in Mediterranean Europe to unravel the full complexity of building resilience in these territories.

### Acknowledgements

We thank all interviewees for their essential contribution to this study, which in some cases even included an invitation into their homes. We are particularly grateful to Nelia de Andrés and family, Xavier García and Raúl Quilez for their generosity and support in the field.

### Notes

1. We are aware that the term “territory” is not an exact equivalent to the French “*territoire*” or Spanish “*territorio*.” However, a detailed differentiation and description of each term and their academic traditions is outside the scope of this paper. Here, the word “territory” refers to the way critical geography traditions, (largely non-Anglo-Saxon) have conceptualized the term.
2. For a more detailed review of how these two concepts reinforce one another, see (Barreteau *et al.* 2016).
3. (over 2000 inhabitants).
4. ICONA is the Nature Conservation Institute constituted during Franco’s dictatorship and dismantled in 1995; it was strongly dominated by forest and civil engineers (Ruiz 1994). It held the competences of nature conservation until these were decentralized and transferred to the different autonomous communities and is, therefore, associated with strong centralized approaches.

### Disclosure statement

No potential conflict of interest was reported by the author(s).

### Funding

This work was supported by the Pyrolife project, funded by the European Union’s Horizon 2020 research and innovation program MSCA-ITN- 2019 – Innovative Training Networks, under grant agreement No. 860787.

### Supplemental data

Supplemental data for this article can be accessed [here](#).

### ORCID

Carmen Rodríguez Fernández-Blanco  <http://orcid.org/0000-0002-6262-1924>

Bart Muys  <http://orcid.org/0000-0001-9421-527X>

Georg Winkel  <http://orcid.org/0000-0002-9254-0447>

Constanza Parra  <http://orcid.org/0000-0003-2456-6757>



## References

- Abrams, J., H. Huber-Stearns, M. Steen-Adams, E. J. Davis, C. Bone, M. F. Nelson, and C. Moseley. 2021. "Adaptive Governance in a Complex Social-Ecological Context: Emergent Responses to a Native Forest Insect Outbreak." *Sustainability Science* 16 (1): 53–68. doi:10.1007/s11625-020-00843-5.
- Abrams, J. B., M. Knapp, T. B. Paveglio, A. Ellison, C. Moseley, M. Nielsen-Pincus, M. Carroll, *et al.* 2015. "Re-Envisioning Community-Wildfire Relations in the U.S. West as Adaptive Governance." *Ecology and Society* 20 (3): 34. doi:10.5751/ES-07848-200334.
- Adger, W. N., T. P. Hughes, C. Folke, S. R. Carpenter, and J. Rockström. 2005. "Social-Ecological Resilience to Coastal Disasters." *Science (New York, N.Y.)* 309 (5737): 1036–1039. doi:10.1126/science.1112122.
- AE-Agró. 2022. "Escapar del foc i caure a les brases." Accessed 28 December 2023. <https://accioecologista-agro.org/escapar-del-foc-i-caure-a-les-brases/>
- Altschuler, B. 2013. "Territorio y Desarrollo: Aportes de la Geografía y Otras Disciplinas Para Repensarlos." *Theomai* 27: 64–79.
- Amat, X. 2003. "La resiliencia del territorio alicantino. Una interpretación geográfica ecocrítica." PhD Thesis, University of Alicante.
- Andrés Durá, R. 2023. "Renovables sí, Pero No Así." *La Vanguardia* February 18, 2023. <https://www.lavanguardia.com/local/valencia/20230218/8763036/renovables-asi.html>.
- Baños, C. J., M. Hernández, A. M. Rico, and J. Olcina. 2019. "The Hydrosocial Cycle in Coastal Tourist Destinations in Alicante, Spain: Increasing Resilience to Drought." *Sustainability* 11 (16): 4494. doi:10.3390/su11164494.
- Barbier, R., and P. Hamma. 2021. *La Fabrique Contemporaine Des Territoires*. Paris: Le Cavalier Bleu.
- Barnaud, C., A. Fischer, S. Staddon, K. Blackstock, C. Moreau, E. Corbera, A. Hester, *et al.* 2021. "Is Forest Regeneration Good for Biodiversity? Exploring the Social Dimensions of an Apparently Ecological Debate." *Environmental Science & Policy* 120: 63–72. doi:10.1016/j.envsci.2021.02.012.
- Barreteau, O., D. Giband, M. Schoon, J. Cerceau, F. Declerck, S. Ghiotti, T. James, *et al.* 2016. "Bringing Together Social-Ecological System and Territoire Concepts to Explore Nature-Society Dynamics." *Ecology and Society* 21 (4): 42. doi:10.5751/ES-08834-210442.
- Barth, M., T. Masson, I. Fritsche, K. Fielding, and J. R. Smith. 2021. "Collective Responses to Global Challenges: The Social Psychology of Pro-Environmental Action." *Journal of Environmental Psychology* 74: 101562. doi:10.1016/j.jenvp.2021.101562.
- Berkes, F., C. Folke, and J. Colding. 1998. *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge: Cambridge University Press.
- Bidegain, Í., C. A. López-Santiago, J. A. González, R. Martínez-Sastre, F. Ravera, and C. Cerda. 2020. "Social Valuation of Mediterranean Cultural Landscapes: Exploring Landscape Preferences and Ecosystem Services Perceptions through a Visual Approach." *Land* 9 (10): 390. doi:10.3390/land9100390.
- Biggs, R., M. Schlüter, and M. L. Schoon. 2015. *Principles for Building Resilience: Sustaining Ecosystem Services in Social-Ecological Systems*. Cambridge: Cambridge University Press. doi:10.1017/CBO9781316014240.
- Biggs, R., de Vos, A., Preiser, R., Clements, H., Maciejewski K., and Schlüter M.. 2021. *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Taylor & Francis. doi:10.4324/9781003021339.
- Biggs, R., F. R. Westley, and S. R. Carpenter. 2010. "Navigating the Back Loop: Fostering Social Innovation and Transformation in Ecosystem Management." *Ecology and Society* 15 (2): 9. doi:10.5751/ES-03411-150209.
- Boelens, R., J. Hoogesteger, E. Swyngedouw, J. Vos, and P. Wester. 2016. "Hydrosocial Territories: A Political Ecology Perspective." *Water International* 41 (1): 1–14. doi:10.1080/02508060.2016.1134898.
- Bosomworth, K. 2018. "A Discursive-Institutional Perspective on Transformative Governance: A Case from a Fire Management Policy Sector." *Environmental Policy and Governance* 28 (6): 415–425. doi:10.1002/eet.1806.

- Bosomworth, K. 2015. "Climate Change Adaptation in Public Policy: Frames, Fire Management, and Frame Reflection." *Environment and Planning C: Government and Policy* 33 (6): 1450–1466. doi:[10.1177/0263774X15614138](https://doi.org/10.1177/0263774X15614138).
- Boyd, E., and C. Folke. 2011. "Adapting Institutions, Adaptive Governance and Complexity: An Introduction." In *Adapting Institutions: Governance, Complexity and Social-Ecological Resilience*, 1–8. New York: Cambridge University Press. doi:[10.1017/CBO9781139017237.003](https://doi.org/10.1017/CBO9781139017237.003).
- Brottons, L., N. Aquilué, M. De Cáceres, M.-J. Fortin, and A. Fall. 2013. "How Fire History, Fire Suppression Practices and Climate Change Affect Wildfire Regimes in Mediterranean Landscapes." *PLoS One* 8 (5): E62392. doi:[10.1371/journal.pone.0062392](https://doi.org/10.1371/journal.pone.0062392).
- Buizer, M., and T. Kurz. 2016. "Too Hot to Handle: Depoliticisation and the Discourse of Ecological Modernisation in Fire Management Debates." *Geoforum* 68: 48–56. doi:[10.1016/j.geoforum.2015.11.011](https://doi.org/10.1016/j.geoforum.2015.11.011).
- Butler, W., and B. E. Goldstein. 2010. "The US Fire Learning Network: Springing a Rigidity Trap through Multi-Scalar Collaborative Networks Research, Part of a Special Feature on Resilience through Multi-Scalar Collaboration the US Fire Learning Network: Springing a Rigidity Trap through Multis." *Ecology and Society* 15 (3): 21. doi:[10.5751/ES-03437-150321](https://doi.org/10.5751/ES-03437-150321).
- Cabanes Pecourt, D. 1977. *El Repartiment de la Ciudad de Valencia*. Valencia: Temas Valencianos.
- Canadas, M. J., M. Leal, F. Soares, A. Novais, P. F. Ribeiro, L. Schmidt, A. Delicado, et al. 2023. "Wildfire Mitigation and Adaptation: Two Locally Independent Actions Supported by Different Policy Domains." *Land Use Policy* 124: 106444. doi:[10.1016/j.landusepol.2022.106444](https://doi.org/10.1016/j.landusepol.2022.106444).
- Carpenter, S. R., K. J. Arrow, S. Barrett, R. Biggs, W. A. Brock, A. S. Crépin, G. Engström, et al. 2012. "General Resilience to Cope with Extreme Events." *Sustainability* 4 (12): 3248–3259. doi:[10.3390/su4123248](https://doi.org/10.3390/su4123248).
- Carpenter, S. R., and W. A. Brock. 2008. "Adaptive Capacity and Traps." *Ecology and Society* 13 (2): 40. doi:[10.5751/ES-02716-130240](https://doi.org/10.5751/ES-02716-130240).
- Cary, M. M. 2023. "Pyropolitics and the Production of Territory." *Environment and Society* 14 (1): 104–121. doi:[10.3167/ares.2023.140107](https://doi.org/10.3167/ares.2023.140107).
- Castelló, E., and M. Montagut. 2019. "Framing Forest Fires and Environmental Activism: A Storytelling Contest about Human Intervention in Nature." *Communication & Society* 32 (4): 291–306. doi:[10.15581/003.32.4.291-306](https://doi.org/10.15581/003.32.4.291-306).
- Castro-Arce, K. 2022. "Towards More Socially-Ecologically Innovative Regions." PhD Thesis, University of Groningen.
- Castro-Arce, K., C. Parra, and F. Vanclay. 2019. "Social Innovation, Sustainability and the Governance of Protected Areas: Revealing Theory As It Plays out in Practice in Costa Rica." *Journal of Environmental Planning and Management* 62 (13): 2255–2272. doi:[10.1080/09640568.2018.1537976](https://doi.org/10.1080/09640568.2018.1537976).
- Castro-Arce, K., and F. Vanclay. 2019. "Transformative Social Innovation for Sustainable Rural Development: An Analytical Framework to Assist Community-Based Initiatives." *Journal of Rural Studies* 74: 45–54. doi:[10.1016/j.jrurstud.2019.11.010](https://doi.org/10.1016/j.jrurstud.2019.11.010).
- Cattaneo, A., A. Nelson, and T. McMenomy. 2021. "Global Mapping of Urban-Rural Catchment Areas Reveals Unequal Access to Services." *Proceedings of the National Academy of Sciences of the United States of America* 118: E2011990118. doi:[10.1073/PNAS.2011990118/SUPPL\\_FILE/PNAS.2011990118.SD01.XLSX](https://doi.org/10.1073/PNAS.2011990118/SUPPL_FILE/PNAS.2011990118.SD01.XLSX).
- Cerdan, R. 2002. "Planificació territorial i dimensió socioambiental : una lectura geogràfica dels incendis forestals al Bages." PhD Thesis, Universitat Autònoma de Barcelona.
- Chipangura, P., D. Van Niekerk, and G. Van Der Waltd. 2017. "Disaster Risk Problem Framing: Insights from Societal Perceptions in Zimbabwe." *International Journal of Disaster Risk Reduction* 22: 317–324. doi:[10.1016/j.ijdr.2017.02.012](https://doi.org/10.1016/j.ijdr.2017.02.012).
- Cinner, J. E., and M. L. Barnes. 2019. "Social Dimensions of Resilience in Social-Ecological Systems." *One Earth* 1 (1): 51–56. doi:[10.1016/j.oneear.2019.08.003](https://doi.org/10.1016/j.oneear.2019.08.003).
- Conselleria de Agricultura, P. y A. 1995. DECRETO 25/1995, de 6 febrero, del Gobierno Valenciano, por el que se declara de utilidad pública y urgente ejecución la concentración parcelaria de Aras de Alpuente.
- Conselleria de Medi Ambient. 2023. El territorio forestal de la Comunitat Valenciana.

- Conselleria de Medi Ambient, U. y H. 2011a. Objetivo 05. Mejorar las condiciones de vida del Sistema Rural - Estrategia Territorial Comunitat Valenciana.
- Conselleria de Medi Ambient, U. y H. 2011b. Gobernanza Territorial. Estrategia territorial Comunitat Valenciana.
- Conselleria de Medi Ambient, U. y H. 2011c. Estrategia territorial comunitat Valenciana Objetivo 08 Minimizar los efectos de los riesgos naturales e inducidos.
- Copes-Gerbitz, K., S. M. Hagerman, and L. D. Daniels. 2021. "Situating Indigenous Knowledge for Resilience in Fire-Dependent Social-Ecological Systems." *Ecology and Society* 26 (4): 25. doi:10.5751/ES-12757-260425.
- Cote, M., and A. J. Nightingale. 2012. "Resilience Thinking Meets Social Theory: Situating Social Change in Socio-Ecological Systems (SES) Research." *Progress in Human Geography* 36 (4): 475–489. doi:10.1177/0309132511425708.
- Cumming, G. S. 2011. "Spatial Resilience: Integrating Landscape Ecology, Resilience, and Sustainability." *Landscape Ecology* 26 (7): 899–909. doi:10.1007/s10980-011-9623-1.
- Cuquerella, T., and M. Giménez. 2019. "La Demografía Bipolar Valenciana: Las Grandes Urbes Frente a la "España Vacía"." *Eldiario.Es*, December 13, 2019. [https://www.eldiario.es/comunitat-valenciana/comarcas/interior-valencia-castellon-comtat-nacimientos\\_1\\_1193667.html](https://www.eldiario.es/comunitat-valenciana/comarcas/interior-valencia-castellon-comtat-nacimientos_1_1193667.html)
- Darques, R. 2015. "Mediterranean Cities under Fire. A Critical Approach to the Wildland-Urban Interface." *Applied Geography* 59: 10–21. doi:10.1016/j.apgeog.2015.02.008.
- Davos, S., P. Bach, and C. Heredia. 2019. "La Integración del Riesgo de Incendios Forestales en el Urbanismo Una aproximación normativa, analítica y práctica para el caso de Cataluña [The Integration of Wildfire Risk in Urbanism: A Legal, Analytical and Practical Approach for Catalonia]." Paper presented at the XI Seminario Internacional de Investigación En Urbanismo, Barcelona-Santiago de Chile, Junio 14. doi:10.5821/SIIU.6567.
- Del Biaggio, C. 2015. "Territory beyond the Anglophone Tradition." In *The Wiley Blackwell Companion to Political Geography*, 35–47. Chichester: Wiley Blackwell. doi:10.1002/9781118725771.ch4.
- Diario de Burgos. 2022. "Ya No Solo Es Vaciada, Ahora Estamos En La España Quemada." *Diario de Burgos*, July 21. <https://www.diariodeburgos.es/Noticia/Z471DF8F0-FCD1-F8EF-5D505495C8C2856F/202207/Ya-no-solo-es-vaciada-ahora-estamos-en-la-Espana-quemada>.
- Doerr, S. H., and C. Santín. 2016. "Global Trends in Wildfire and Its Impacts: Perceptions versus Realities in a Changing World." *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences* 371 (1696): 20150345. doi:10.1098/RSTB.2015.0345.
- Duane, A., A. Trasobares, E. Górriz, L. Casafont, and S. Maltoni. 2022. "The FIRE-RES Project: Innovative Technologies and Socio-Ecological-Economic Solutions for FIRE RESilient Territories in Europe." *Environmental Sciences Proceedings* 17 (1): 100. doi:10.3390/envirosci2022017100.
- Duit, A., V. Galaz, K. Ebbesson, and J. Eckerberg. 2010. "Introduction: Governance, Complexity, and Resilience." *Global Environmental Change* 20 (3): 363–368. doi:10.1016/j.gloenvcha.2009.01.004.
- Dunn, C. J., C. D. O'connor, J. Abrams, M. P. Thompson, D. E. Calkin, J. D. Johnston, R. Stratton, and J. Gilbertson-Day. 2020. "Wildfire Risk Science Facilitates Adaptation of Fire-Prone Social-Ecological Systems to the New Fire Reality." *Environmental Research Letters* 15 (2): 025001. doi:10.1088/1748-9326/ab6498.
- Elden, S. 2010. "Land, Terrain, Territory." *Progress in Human Geography* 34 (6): 799–817. doi:10.1177/0309132510362603.
- Esparcia, J., and J. Noguera. 1995. *Las Políticas de Desarrollo Rural en la Comunidad Valenciana*. València: Cuadernos de Geografía de la Universitat de València.
- Essen, M., S. McCaffrey, J. Abrams, and T. Paveglio. 2022. "Improving Wildfire Management Outcomes: Shifting the Paradigm of Wildfire from Simple to Complex Risk." *Journal of Environmental Planning and Management* 66 (5): 909–927. doi:10.1080/09640568.2021.2007861.
- Estrela, M. J., D. Peñarrocha, and M. Millán. 2000. "Multi-Annual Drought Episodes in the Mediterranean (Valencia Region) from 1950-1996. A Spatio-Temporal Analysis." *International Journal of Climatology* 20 (13): 1599–1618. doi:10.1002/1097-0088(20001115)20:131599::AID-JOC5593.0.CO;2-Q.
- FAO and Plan Bleu. 2018. *State of Mediterranean Forests 2018*. Rome: FAO.

- Fath, B. D., C. A. Dean, and H. Katzmair. 2015. "Navigating the Adaptive Cycle: An Approach to Managing the Resilience of Social Systems." *Ecology and Society* 20 (2): 24. doi:10.5751/ES-07467-200224.
- Fischer, A. P., T. A. Spies, T. A. Steelman, C. Moseley, B. R. Johnson, J. D. Bailey, A. A. Ager, et al. 2016. "Wildfire Risk as a Socioecological Pathology." *Frontiers in Ecology and the Environment* 14 (5): 276–284. doi:10.1002/fee.1283.
- Folke, C., R. Biggs, A. V. Norström, B. Reyers, and J. Rockström. 2016. "Social-Ecological Resilience and Biosphere-Based Sustainability Science." *Ecology and Society* 21 (3): 41. doi:10.5751/ES-08748-210341.
- Folke, C., J. Colding, and F. Berkes. 2009. "Synthesis: Building Resilience and Adaptive Capacity in Social–Ecological Systems." In *Navigating Social-Ecological Systems*, edited by Fikret Berkes, Johan Colding, and Carl Folke, 352–387. Cambridge: Cambridge University Press. doi:10.1017/cbo9780511541957.020.
- Folke, C., T. Hahn, P. Olsson, and J. Norberg. 2005. "Adaptive Governance of Social-Ecological Systems." *Annual Review of Environment and Resources* 30 (1): 441–473. doi:10.1146/annurev.energy.30.050504.144511.
- Frei, T., J. Derks, C. Rodríguez Fernández-Blanco, and G. Winkel. 2020. "Narrating Abandoned Land: Perceptions of Natural Forest Regrowth in Southwestern Europe." *Land Use Policy* 99: 105034. doi:10.1016/j.landusepol.2020.105034.
- Frei, T., K. Edou, C. Rodríguez Fernández-Blanco, and G. Winkel. 2022. "Governing Abandoned Land: Storylines on Natural Forest Regrowth in France and Spain." *Environmental Science & Policy* 135: 58–66. doi:10.1016/j.envsci.2022.04.022.
- Galego, D., F. Moulaert, M. Brans, and G. Santinha. 2022. "Social Innovation & Governance: A Scoping Review." *Innovation: The European Journal of Social Science Research* 35 (2): 265–290. doi:10.1080/13511610.2021.1879630.
- Garcia, A., N. Gonda, E. Atkins, N. J. Godden, K. P. Henrique, M. Parsons, P. Tschakert, and G. Ziervogel. 2022. "Power in Resilience and Resilience's Power in Climate Change Scholarship." *Wiley Interdisciplinary Reviews: Climate Change*. 13 (3): 1–21. doi:10.1002/wcc.762.
- Gill, A. M., and G. Allan. 2008. "Large Fires, Fire Effects and the Fire Regime Concept." *International Journal of Wildland Fire* 17 (6): 688. doi:10.1071/WF07145.
- González-Hidalgo, M., I. Otero, and G. Kallis. 2014. "Seeing beyond the Smoke: The Political Ecology of Fire in Horta de Sant Joan (Catalonia)." *Environment and Planning A: Economy and Space* 46 (5): 1014–1031. doi:10.1068/a45600.
- Gonzalez-Mathiesen, C., S. Ruane, and A. March. 2021. "Integrating Wildfire Risk Management and Spatial Planning – A Historical Review of Two Australian Planning Systems." *International Journal of Disaster Risk Reduction* 53: 101984. doi:10.1016/j.ijdrr.2020.101984.
- Gordon, J. S., D. Matarrita-Cascante, R. C. Stedman, and A. E. Luloff. 2010. "Wildfire Perception and Community Change." *Rural Sociology* 75 (3): 455–477. doi:10.1111/j.1549-0831.2010.00021.x.
- Górriz-Mifsud, E., M. Burns, and V. Marini Govigli. 2019. "Civil Society Engaged in Wildfires: Mediterranean Forest Fire Volunteer Groupings." *Forest Policy and Economics* 102: 119–129. doi:10.1016/j.forpol.2019.03.007.
- Górriz-Mifsud, E., L. Olza Donazar, E. Montero Eseverri, and V. Marini Govigli. 2019. "The Challenges of Coordinating Forest Owners for Joint Management." *Forest Policy and Economics* 99: 100–109. doi:10.1016/j.forpol.2017.11.005.
- GVA. 2011. Estrategia Territorial de la Comunitat Valenciana. Àrea Funcional de Valencia. Conselleria de Medi Ambient, Urbanisme y Habitatge.
- GVA. 2017. Estrategia Valenciana de Prevención de Incendios Forestals y Adaptación al Cambio Climático. Horizonte 2017-2020. D.G. Prevenció d'Incendis Forestals. Valencia.
- GVA. 2022. Estadística de incendios forestals - Prevención de Incendios Forestales y Sensibilización - Generalitat Valenciana - D.G. Prevenció d'Incendis Forestals. Accessed 22 December 22. <https://agroambient.gva.es/es/web/prevencion-de-incendios/estadistica-de-incendios-forestales>
- GVA. 2023. *CORINE Land Cover 2019*. Valencia: Institut Cartogràfic Valencià.

- Haider, L. J., W. J. Boonstra, G. D. Peterson, and M. Schlüter. 2018. "Traps and Sustainable Development in Rural Areas: A Review." *World Development* 101: 311–321. doi:10.1016/j.worlddev.2017.05.038.
- Halofsky, J. E., D. L. Peterson, and B. J. Harvey. 2020. "Changing Wildfire, Changing Forests: The Effects of Climate Change on Fire Regimes and Vegetation in the Pacific Northwest, USA." *Fire Ecology* 16 (1): 4. doi:10.1186/s42408-019-0062.
- Harrison, S. P., I. C. Prentice, K. J. Bloomfield, N. Dong, M. Forkel, M. Forrest, R. K. Ningthoujam, *et al.* 2021. "Understanding and Modelling Wildfire Regimes: An Ecological Perspective." *Environmental Research Letters* 16 (12): 125008. doi:10.1088/1748-9326/ac39be.
- Hermosilla, J. 2019. Estrategias territoriales y empleo valenciano. Desarrollo territorial y mercado laboral valenciano. Avalem territori. Generalitat Valenciana. <https://labora.gva.es/documents/166000883/166682984/Estrategias+Territoriales+y+Empleo+Valenciano.pdf/0ae139ea-6f1b-4472-877a-ced315a094be>.
- Hermosilla Pla, J., V. Budí Orduña, M. L. Alamá, A. Martínez Puche, J. M. García Álvarez-Coque, J. Escribano, J. Martín Cubas, G. Fansa, and M. Fernández Villarejo. 2021. Estrategia Avant 20–30. Generalitat Valenciana. <https://avant.gva.es/es/estrategia-avant>.
- Howitt, R. 2014. "Coexisting with Fire? A Commentary on the Scale Politics of Adaptation." *Geographical Research* 52 (1): 61–64. doi:10.1111/1745-5871.12036.
- INE. 2020. Renta media por hogar. Atlas de distribución de la renta de los hogares. Accessed 19 April 23. <https://inespain.maps.arcgis.com/apps/webappviewer/index.html?id=a928ceb1df9f4c409af64e9a4850631c>
- Ingalls, M. L. 2017. "Not Just Another Variable: Untangling the Spatialities of Power in Social–Ecological Systems." *Ecology and Society* 22 (3): 20. doi:10.5751/ES-09543-220320.
- Kaika, M. 2017. "Don't Call Me Resilient Again!": The New Urban Agenda as Immunology ... or ... What Happens When Communities Refuse to Be Vaccinated with 'Smart Cities' and Indicators." *Environment and Urbanization* 29 (1): 89–102. doi:10.1177/0956247816684763.
- Keenleyside, C., and G. M. Tucker. 2010. *Farmland Abandonment in the EU: An Assessment of Trends and Prospects*. Report prepared for WWF. London: Institute for European Environmental Policy.
- Klein, J., M.-D. Pitarch-Garrido, A. Sales Ten, and J. Martín Cubas. 2020. "El Desarrollo Local Como Resultado de un Proceso de Innovación Social en Saint-Camille (Quebec) y Aras de Los Olmos (Valencia)." *Investigaciones Geográficas* 74: 165–182. doi:10.4018/978-1-4666-8814-8.ch029.
- Koontz, T. M., D. Gupta, P. Mudliar, and P. Ranjan. 2015. "Adaptive Institutions in Social–Ecological Systems Governance: A Synthesis Framework." *Environmental Science & Policy* 53: 139–151. doi:10.1016/j.envsci.2015.01.003.
- Kvale, S., and S. Brinkmann. 2007. "Introduction to Interview Research." In *Doing Interviews*, edited by S. Kvale, 2–11. London: SAGE.
- La Culebra No Se Calla. 2022. "¿Quiénes Somos? - La Culebra No Se Calla." Accessed July 12, 2022. <http://www.laculebranoscalla.es/quienes-somos/>.
- Lelouvier, R., D. Nuijten, and M. Onida. 2021. *Land-Based Wildfire Prevention*. Luxembourg: Publications Office of the European Union. doi:10.2779/37846.
- Leone, V., F. Tedim, and G. Xanthopoulos. 2020. "Fire Smart Territory as an Innovative Approach to Wildfire Risk Reduction." In *Extreme Wildfire Events and Disasters: Root Causes and New Management Strategies*, edited by Fantina Tedim, Vittorio Leone, and Tara K. McGee, 201–215. Amsterdam: Elsevier.
- Li, T., Y. Dong, and Z. Liu. 2023. "A Review of Social–Ecological System Resilience: Mechanism, Assessment and Management." *The Science of the Total Environment* 723: 138113. doi:10.1016/j.scitotenv.2020.138113.
- López García-Molins, Á. 2000. *Minifundios*. Valencia, Spain: El País.
- Luker, K. 2008. *Salsa Dancing into the Social Sciences. Research in an Age of Info-Glut*. London, UK: Harvard University Press.
- Mantero, G., D. Morresi, R. Marzano, R. Motta, D. J. Mladenoff, and M. Garbarino. 2020. "The Influence of Land Abandonment on Forest Disturbance Regimes: A Global Review." *Landscape Ecology* 35 (12): 2723–2744. doi:10.1007/s10980-020-01147-w.
- MAPA. 2003. "Cap. 4.17. Comunidad Valenciana." In *El Libro Blanco de La Agricultura y El Desarrollo Rural*. Madrid: Tomo III.



- Marin, J. 2021. "Global Resilience Models and Territories of the South. A Critical Review." *International Journal of Disaster Risk Reduction* 66: 102541. doi:10.1016/j.ijdr.2021.102541.
- Marini Govigli, V., M. Rois-Díaz, M. den Herder, R. Bryce, D. Tuomasjukka, and E. Górriz-Mifsud. 2022. "The Green Side of Social Innovation: Using Sustainable Development Goals to Classify Environmental Impacts of Rural Grassroots Initiatives." *Environmental Policy and Governance* 32 (6): 459–477. doi:10.1002/eet.2019.
- Martín Pardo, J. M. 2015. Las asociaciones de propietarios forestales privados en la Comunitat Valenciana : Análisis de situación y perspectivas. <https://riunet.upv.es/bitstream/handle/10251/54234/MART%C3%8DN%20-%20Las%20asociaciones%20de%20propietarios%20forestales%20privados%20en%20la%20Comunitat%20Valenciana%3A%20an%C3%A1lisi...pdf>.
- Massey, D. 1991. "A Global Sense of Place." *Marxism Today*, June, 24–29.
- Masterson, V. A., R. C. Stedman, J. Enqvist, M. Tengö, M. Giusti, D. Wahl, and U. Svedin. 2017. "The Contribution of Sense of Place to Social-Ecological Systems Research: A Review and Research Agenda." *Ecology and Society* 22 (1): 49. doi:10.5751/ES-08872-220149.
- McLauchlan, K. K., P. E. Higuera, J. Miesel, B. M. Rogers, J. Schweitzer, J. K. Shuman, A. J. Tepley, et al. 2020. "Fire as a Fundamental Ecological Process : Research Advances and Frontiers." *Journal of Ecology* 108 (5): 2047–2069. doi:10.1111/1365-2745.13403.
- Meerow, S., and J. P. Newell. 2021. "Urban Resilience for Whom, What, When, Where, and Why?" In *Geographic Perspectives on Urban Sustainability*, edited by V. Kelly Turner and David H. Kaplan, 43–63. New York: Routledge.
- Mehmood, A., and C. Parra. 2013. "Social Innovation in an Unsustainable World." In *The International Handbook on Social Innovation*, edited by Frank Moulaert, Diana MacCallum, Abid Mehmood, and Abdelillah Hamdouch, 53–66. Cheltenham: Edward Elgar. doi:10.4337/9781849809993.00014.
- Meijering, M., T. Abcouwer, and E. Takács. 2021. "Overcoming the Traps in the Adaptive Cycle of Resilience Model." In *Eurasian Business and Economics Perspectives: Proceedings of the 33rd Eurasia Business and Economics Society Conference*, 59–83. Madrid: Springer International Publishing.
- Melo, C. 2020. "L'Horta de València: Past and Present Dynamics in Landscape Change and Planning." *International Journal of Sustainable Development and Planning* 15 (01): 28–44. doi:10.2495/SDP-V15-N1-28-44.
- Méndez, P. F., D. Fajardo-Ortiz, and J. M. Holzer. 2022. "Disrupting the Governance of Social-Ecological Rigidity Traps: Can Pluralism Foster Change towards Sustainability?" *Advances in Ecological Research* 66: 243–291.
- Méndez, R. 2012. "Ciudades y Metáforas: Sobre El Concepto de Resiliencia Urbana." *Ciudad y Territorio Estudios Territoriales* 2012: 215–231.
- Molina, C. M., and L. Galiana-Martín. 2016. "Fire Scenarios in Spain: A Territorial Approach to Proactive Fire Management in the Context of Global Change." *Forests* 7 (12): 273. doi:10.3390/f7110273.
- Moore, M. L., and F. Westley. 2011. "Surmountable Chasms: Networks and Social Innovation for Resilient Systems." *Ecology and Society* 16 (1): 5. doi:10.5751/ES-03812-160105.
- Moreira, F., M. Leal, R. Bergonse, M. J. Canadas, A. Novais, S. Oliveira, P. F. Ribeiro, J. L. Zêzere, and J. L. Santos. 2023. "Recent Trends in Fire Regimes and Associated Territorial Features in a Fire-Prone Mediterranean Region." *Fire* 6 (2): 60. doi:10.3390/fire6020060.
- Moritz, M. A., E. Batllori, R. A. Bradstock, A. Malcolm Gill, J. Handmer, P. F. Hessburg, J. Leonard, et al. 2014. "Learning to Coexist with Wildfire." *Nature* 515 (7525): 58–66. doi:10.1038/nature13946.
- Moulaert, F., D. MacCallum, A. Mehmood, A. Hamdouch, and A. Hamdouch. 2013. *The International Handbook on Social Innovation, the International Handbook on Social Innovation*. Cheltenham: Edward Elgar Publishing Limited. doi:10.4337/9781849809993.
- Moulaert, F., D. MacCallum, P. Van den Broeck, and M. Garcia. 2019. "Bottom-Linked Governance and Socially Innovative Political Transformation." In *Atlas of Social Innovation - A World of New Practices*, edited by H. Jürge, 63–66. Munich: Oekom Verlag.
- Muñoz Criado, A., and V. Domenech Gregori. 2012. *Comunitat Valenciana 2030. Síntesis de La Estrategia Territorial*. Valencia: Generalitat Valenciana.

- Muys, B., E. Skrimizea, P. Van Den Broeck, C. Parra, R. Tognetti, D. W. Shanafelt, B. Somers, K. Van Meerbeek, and I. Zivojinovic. 2023. "From Biocities to Bioregions and Back: Transforming Urban-Rural Relationships." In *Transforming Biocities. Future City*, edited by G. E. Scarascia-Mugnozza, V. Guallart, F. Salbitano, G. Ottaviani Aalmo, and S. Boeri, 24. Cham: Springer. doi:[10.1007/978-3-031-29466-2\\_10](https://doi.org/10.1007/978-3-031-29466-2_10).
- Neale, T., A. Zahara, and W. Smith. 2019. "An Eternal Flame: The Elemental Governance of Wildfire's Pasts, Presents and Futures." *Cultural Studies Review* 25 (2): 115–134. doi:[10.5130/csr.v25i2.6886](https://doi.org/10.5130/csr.v25i2.6886).
- Nelson, D. R., W. N. Adger, and K. Brown. 2007. "Adaptation to Environmental Change: Contributions of a Resilience Framework." *Annual Review of Environment and Resources* 32 (1): 395–419. doi:[10.1146/annurev.energy.32.051807.090348](https://doi.org/10.1146/annurev.energy.32.051807.090348).
- Neumeier, S. 2012. "Why Do Social Innovations in Rural Development Matter and Should They Be Considered More Seriously in Rural Development Research?-Proposal for a Stronger Focus on Social Innovations in Rural Development Research." *Sociologia Ruralis* 52 (1): 48–69. doi:[10.1111/j.1467-9523.2011.00553.x](https://doi.org/10.1111/j.1467-9523.2011.00553.x).
- Nieto-Romero, M., S. Valente, E. Figueiredo, and C. Parra. 2019. "Historical Commons as Sites of Transformation. A Critical Research Agenda to Study Human and More-than-Human Communities." *Geoforum* 107: 113–123. doi:[10.1016/j.geoforum.2019.10.004](https://doi.org/10.1016/j.geoforum.2019.10.004).
- Nikinmaa, L., M. Lindner, E. Cantarello, A. S. Jump, R. Seidl, G. Winkel, and B. Muys. 2020. "Reviewing the Use of Resilience Concepts in Forest Sciences." *Current Forestry Reports* 6 (2): 61–80. doi:[10.1007/s40725-020-00110-x](https://doi.org/10.1007/s40725-020-00110-x).
- Nova Ruralitat. 2019. *Manifest per un govern equitatiu del territori Valencià*. Comarques Nord del País Valencià, Spain: Nova Ruralitat.
- Nunes, L. J. R., M. A. M. Raposo, and C. J. Pinto Gomes. 2021. "A Historical Perspective of Landscape and Human Population Dynamics in Guimarães (Northern Portugal): Possible Implications of Rural Fire Risk in a Changing Environment." *Fire* 4 (3): 49. doi:[10.3390/fire4030049](https://doi.org/10.3390/fire4030049).
- Ostrom, E. 2007. "A Diagnostic Approach for Going beyond Panaceas." *Proceedings of the National Academy of Sciences of the United States of America* 104 (39): 15181–15187. doi:[10.1073/pnas.0702288104](https://doi.org/10.1073/pnas.0702288104).
- Otero, I., J. Marull, E. Tello, G. L. Diana, M. Pons, F. Coll, and M. Boada. 2015. "Land Abandonment, Landscape, and Biodiversity: Questioning the Restorative Character of the Forest Transition in the Mediterranean." *Ecology and Society* 20 (2): 7. doi:[10.5751/ES-07378-200207](https://doi.org/10.5751/ES-07378-200207).
- Pachoud, C., K. Koop, and E. George. 2022. "Societal Transformation through the Prism of the Concept of Territoire: A French Contribution." *Environmental Innovation and Societal Transitions* 45: 101–113. doi:[10.1016/j.eist.2022.10.001](https://doi.org/10.1016/j.eist.2022.10.001).
- Parra, C. 2010. "Sustainability and Multi-Level Governance of Territories Classified as Protected Areas in France: The Morvan Regional Park Case." *Journal of Environmental Planning and Management* 53 (4): 491–509.
- Patton, M. Q. 2002. *Qualitative Research and Evaluation Methods*. Thousand Oaks, CA: Sage.
- Pausas, J. G., and J. E. Keeley. 2019. "Wildfires as an Ecosystem Service." *Frontiers in Ecology and the Environment* 17 (5): 289–295. doi:[10.1002/fee.2044](https://doi.org/10.1002/fee.2044).
- Pausas, J. G., and S. Paula. 2012. "Fuel Shapes the Fire-Climate Relationship: Evidence from Mediterranean Ecosystems." *Global Ecology and Biogeography* 21 (11): 1074–1082. doi:[10.1111/j.1466-8238.2012.00769.x](https://doi.org/10.1111/j.1466-8238.2012.00769.x).
- Perles-Ribes, J. F., A. Ramón-Rodríguez, J. F. Vera-Rebollo, and J. Ivars-Baidal. 2018. "The End of Growth in Residential Tourism Destinations: Steady State or Sustainable Development? The Case of Calpe." *Current Issues in Tourism* 21 (12): 1355–1385. doi:[10.1080/13683500.2016.1276522](https://doi.org/10.1080/13683500.2016.1276522).
- Platt, E., S. Charnley, J. D. Bailey, and L. A. Cramer. 2022. "Adaptive Governance in Fire-Prone Landscapes." *Society and Natural Resources*. 35 (4): 353–371. doi:[10.1080/08941920.2022.2035872](https://doi.org/10.1080/08941920.2022.2035872).
- Pulido, F., J. Corbacho, M. Bertomeu, Á. Gómez, N. Guiomar, E. Juárez, B. Lucas, G. Moreno, J. Navalpotro, and G. Palomo. 2023. "Fire-Smart Territories: A Proof of Concept Based on Mosaico Approach." *Landscape Ecology* 38 (12): 3353–3370. doi:[10.1007/s10980-023-01618-w](https://doi.org/10.1007/s10980-023-01618-w).



- Querol, V. A., and X. Ginés Sánchez. 2020. "La Participació Dels Espais Rurals en la Sostenibilitat Ambiental. Anàlisi Dels Discursos D'iniciatives Productives en el Context Rural de Castelló." *Disjuntiva. Crítica de Les Ciències Socials* 1 (2): 13–28. doi:[10.14198/DISJUNTIVA2020.1.2.2](https://doi.org/10.14198/DISJUNTIVA2020.1.2.2).
- Radosavljevic, S., L. J. Haider, S. J. Lade, and M. Schlüter. 2021. "Implications of Poverty Traps across Levels." *World Development* 144: 105437. doi:[10.1016/j.worlddev.2021.105437](https://doi.org/10.1016/j.worlddev.2021.105437).
- Raffestin, C. 2011. *Por Una Geografía Del Poder*. El colegio de Michoacán, Mexico: Traducción y notas Yanga Villagómez Velázquez.
- Ravazzoli, E., C. Dalla Torre, R. Da Re, V. Marini Govigli, L. Secco, E. Górriz-Mifsud, E. Pisani, et al. 2021. "Can Social Innovation Make a Change in European and Mediterranean Marginalized Areas? Social Innovation Impact Assessment in Agriculture, Fisheries, Forestry, and Rural Development." *Sustainability* 13 (4): 1823. doi:[10.3390/su13041823](https://doi.org/10.3390/su13041823).
- Reuelta de la España Vacía. 2022. Yo Paro Por Mi Pueblo-Manifiesto.
- Rodrigues de Mello, G., N. Gulinck, H. Van den Broeck, and P. Parra. 2020. "Social-Ecological Sustainability of Non-Timber Forest Products: A Review and Theoretical Considerations for Future Research." *Forest Policy and Economics* 112: 102109. doi:[10.1016/j.forpol.2020.102109](https://doi.org/10.1016/j.forpol.2020.102109).
- Rodríguez-Carreras, R., X. Ubeda, L. Outeiro, and F. Asperó. 2014. "Perceptions of Social and Environmental Changes in a Mediterranean Forest during the Last 100 Years: The Gavarres Massif." *Journal of Environmental Management* 138: 75–86. doi:[10.1016/j.jenvman.2013.08.013](https://doi.org/10.1016/j.jenvman.2013.08.013).
- Rodríguez Fernández-Blanco, C., E. Górriz-Mifsud, I. Prokofieva, B. Muys, and C. Parra. 2022. "Blazing the Trail: Social Innovation Supporting Wildfire-Resilient Territories in Catalonia (Spain)." *Forest Policy and Economics* 138: 102719. doi:[10.1016/j.forpol.2022.102719](https://doi.org/10.1016/j.forpol.2022.102719).
- Rodríguez-Rodríguez, D., and R. L. Vargas. 2022. "Protected Areas and Rural Depopulation in Spain: A Multi-Stakeholder Perceptual Study." *Land* 11 (3): 384. doi:[10.3390/land11030384](https://doi.org/10.3390/land11030384).
- Ruiz, R. 1994. "La Opinión de Los Ecologistas", *El País*, May 25, 1994. [https://elpais.com/diario/1994/05/25/sociedad/769816802\\_850215.html](https://elpais.com/diario/1994/05/25/sociedad/769816802_850215.html).
- Ruiz Martínez, I., and J. Esparcia Pérez. 2021. "Sinergias Rural-Urbanas: Hacia un Marco Conceptual Aplicado al Área Funcional de Valencia (España)." *TERRA: Revista de Desarrollo Local* (8): 579. doi:[10.7203/terra.8.21347](https://doi.org/10.7203/terra.8.21347).
- Sack, R. D. 1986. *Human Territoriality. Its Theory and History*. Cambridge: Cambridge University Press.
- Scott, J. C. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, CT: Yale University Press.
- Serra Davos, M., E. Plana Bach, and R. Cerdan Heredia. 2019. La integración del riesgo de incendios forestales en el urbanismo. Una aproximación normativa, analítica y práctica para el caso de Cataluña. XI Seminario Internacional de Investigación en Urbanismo, Barcelona-Santiago de Chile, Junio 2019. doi:[10.5821/siiu.6567](https://doi.org/10.5821/siiu.6567).
- SIMRA. 2018. "How to Deliver Rural Services? Collection of Examples of Social Innovation." [https://www.forum-synergies.eu/bdf\\_fiche-document-86\\_en.html](https://www.forum-synergies.eu/bdf_fiche-document-86_en.html).
- Sotiropoulos, D. A. 2004. *Democratization, Administrative Reform and the State in Greece, Italy, Portugal and Spain: Is There a 'Model' of South European Bureaucracy?* London: Hellenic Observatory, London School of Economics and Political Science. <http://eprints.lse.ac.uk/id/eprint/5682>.
- Sotirov, M., and G. Winkel. 2016. "Toward a Cognitive Theory of Shifting Coalitions and Policy Change: Linking the Advocacy Coalition Framework and Cultural Theory." *Policy Sciences* 49 (2): 125–154. doi:[10.1007/s11077-015-9235-8](https://doi.org/10.1007/s11077-015-9235-8).
- Spijker, S. N., and C. Parra. 2018. "Knitting Green Spaces with the Threads of Social Innovation in Groningen and London." *Journal of Environmental Planning and Management* 61 (5–6): 1011–1032. doi:[10.1080/09640568.2017.1382338](https://doi.org/10.1080/09640568.2017.1382338).
- Srivastava, P., and N. Hopwood. 2009. "A Practical Iterative Framework for Qualitative Data Analysis." *International Journal of Qualitative Methods*. 8 (1): 76–84. doi:[10.1177/160940690900800107](https://doi.org/10.1177/160940690900800107).
- Swyngedouw, E. 2011. "Every Revolution Has Its Square': Politicizing the Post-Political City." In *Urban Constellations*, edited by M. Gandy, 22. Berlin: Jovis Verlag GmbH.

- Talubo, J. P., S. Morse, and D. Saroj. 2022. "Whose Resilience Matters? A Socio-Ecological Systems Approach to Defining and Assessing Disaster Resilience for Small Islands." *Environmental Challenges* 7: 100511. doi:10.1016/j.envc.2022.100511.
- Tangney, P., C. Star, Z. Sutton, and B. Clarke. 2023. "Navigating Collaborative Governance: Network Ignorance and the Performative Planning of South Australia's Emergency Management." *International Journal of Disaster Risk Reduction* 96: 103983. doi:10.1016/j.ijdr.2023.103983.
- Tedim, F., V. Leone, and G. Xanthopoulos. 2016. "A Wildfire Risk Management Concept Based on a Social-Ecological Approach in the European Union: Fire Smart Territory." *International Journal of Disaster Risk Reduction* 18: 138–153. doi:10.1016/j.ijdr.2016.06.005.
- TuComarca. 2022. La coordinadora valenciana para la implantación racional de las energías renovables reivindica ante los ayuntamientos su poder de decisión – tucomarca.com. <https://www.tucomarca.com/wordpress/segunda/tag/coordinadora-valenciana-por-la-ubicacion-racional-de-las-energias-renovables/>.
- Urso, G. 2021. "Metropolisation and the Challenge of Rural-Urban Dichotomies." *Urban Geography* 42 (1): 37–57. doi:10.1080/02723638.2020.1760536.
- Uyttewaal, K., N. Prat-Guitart, F. Ludwig, C. Kroeze, and L. Langer. 2023. "Territories in Transition: How Social Contexts Influence Wildland Fire Adaptive Capacity in Rural Northwestern European Mediterranean Areas." *Fire Ecology* 19 (1): 13. doi:10.1186/s42408-023-00168-5.
- Vaersa. 2011. "Plan de accion territorial forestal de la Comunitat Valenciana." [https://agroambient.gva.es/auto/montes-bosques/PATFOR/01\\_MEMORIA/PATFOR\\_Memoria\\_version\\_final.pdf](https://agroambient.gva.es/auto/montes-bosques/PATFOR/01_MEMORIA/PATFOR_Memoria_version_final.pdf).
- Van Dyck, B., and P. Van den Broeck. 2013. "Social Innovation: A Territorial Process." In *The International Handbook on Social Innovation*, 131–141. Cheltenham: Edward Elgar. doi:10.4337/9781849809993.00021.
- Van Niekerk, D. 2014. "From Burning to Learning: Adaptive Governance to Wildfires in the North-West Province of South Africa." *Journal of Human Ecology* 48 (2): 329–339. doi:10.1080/09709274.2014.11906802.
- Verdú López, C. 2020. "Las Quemadas Prescritas En La Comunidad Valenciana. Necesidad y Oportunidad." *Revista Incendios Forestales y Riesgos Naturales*, Vol 1. <https://revistarirn.org/3d-flip-book/las-quemas-prescritas-en-la-comunidad-valenciana-necesidad-y-oportunidad>.
- Vigna, I., A. Besana, E. Comino, and A. Pezzoli. 2021. "Application of the Socio-Ecological System Framework to Forest Fire Risk Management: A Systematic Literature Review." *Sustainability (Sustainability)* 13 (4): 2121. doi:10.3390/su13042121.
- Vila Subirós, J., R. Rodríguez-Carreras, D. Varga, A. Ribas, X. Úbeda, F. Asperó, A. Llausàs, and L. Outeiro. 2016. "Stakeholder Perceptions of Landscape Changes in the Mediterranean Mountains of the North-Eastern Iberian Peninsula." *Land Degradation & Development* 27 (5): 1354–1365. doi:10.1002/ldr.2337.
- Walker, B., and F. Westley. 2011. "Perspectives on Resilience to Disasters across Sectors and Cultures." *Ecology and Society* 16 (2): 0–4. doi:10.5751/ES-04070-160204.
- Walker, H. M., M. G. Reed, and A. J. Fletcher. 2020. "Wildfire in the News Media: An Intersectional Critical Frame Analysis." *Geoforum* 114: 128–137. doi:10.1016/j.geoforum.2020.06.008.
- Weichselgartner, J., and I. Kelman. 2015. "Geographies of Resilience: Challenges and Opportunities of a Descriptive Concept." *Progress in Human Geography* 39 (3): 249–267. doi:10.1177/0309132513518834.
- Wunder, S., D. E. Calkin, V. Charlton, S. Feder, I. Martínez de Arano, P. Moore, F. Rodríguez y Silva, et al. 2021. "Resilient Landscapes to Prevent Catastrophic Forest Fires: Socioeconomic Insights towards a New Paradigm." *Forest Policy and Economics* 128: 102458. doi:10.1016/j.forpol.2021.102458.
- Xanthopoulos, G., G. M. Delogu, V. Leone, F. J. M. Correia, and C. G. Magalhães. 2020. "Firefighting Approaches and Extreme Wildfires." In *Extreme Wildfire Events and Disasters: Root Causes and New Management Strategies*, edited by F. Tedim, V. Leone, and T. K. McGee, 117–132. Amsterdam: Elsevier.
- Yin, R. K. 2009. "Case Study Research." In *Design and Methods. Part I* (Ch. 1–4), 144. Thousand Oaks, CA: SAGE.

- Yu, D. J., M. L. Schoon, J. K. Hawes, S. Lee, J. Park, P. S. C. Rao, L. K. Siebeneck, and S. V. Ukkusuri. 2020. "Toward General Principles for Resilience Engineering." *Risk Analysis* 40 (8): 1509–1537. doi:[10.1111/risa.13494](https://doi.org/10.1111/risa.13494).
- Zambon, I., A. Cerdà, P. Cudlin, P. Serra, S. Pili, and L. Salvati. 2019. "Road Network and the Spatial Distribution of Wildfires in the Valencian Community (1993-2015)." *Agriculture* 9 (5): 100. doi:[10.3390/agriculture9050100](https://doi.org/10.3390/agriculture9050100).