Green *vs.* Green: wind farms and farming communities in Alta Irpinia (Campania Region, Italy)

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Highlights:

- The study examines how wind energy development in Alta Irpinia relates to land grabbing, territorial marginalization, and socio-economic inequality;
- Interviews with local stakeholders highlight discontent over community exclusion and the conversion of farmland into industrial energy sites;
- The research reveals that unregulated wind farm expansion drives extractivist practices and erodes rural identities and economies;
- Local opposition goes beyond NIMBYism, expressing deeper concerns about environmental justice, democratic participation, and territorial autonomy;
- The study offers policy recommendations to align innovation with local heritage, promoting a fairer and more sustainable energy transition.

Abstract: This study explores local socio-economic and environmental perceptions of wind energy development in Alta Irpinia, a rural region in Southern Italy. Employing semi-structured interviews, this qualitative research investigates key informants perspectives on wind farms, emphasizing tensions from territorial appropriation and community marginalization. The paper highlights the conflicts between the energy transition and the preservation of territorial identity, illustrating how the current development model may intensify socio-economic inequalities, cultural alienation, and environmental degradation. The study concludes with policy recommendations to align technological innovation with the preservation of local identities, enriching the discourse on sustainable energy transitions.

1. Introduction

Alta Irpinia, in the southeastern sector of the Avellino Province (Campania, Italy), covers 1,122.16 km² and recorded 56,845 inhabitants as of January 1, 2024 [1] (Figure 1). The area is institutionally classified as a "rural area with development issues" (*Delibera della Giunta Regionale* No. 600/2014) and as a

"peripheral area" under Italy's National Strategy for Inner Areas (*SNAI*) [2]. These categorizations reflect persistent structural vulnerabilities: between 1971 and 2019 the population declined by 25.5%, driven largely by the outmigration of educated youth, while unemployment rates remain above 18% [1]. The local economic structure is characterized by the predominance of small family-run enterprises, absence of a robust industrial base, and dependency on public investment, notably those allocated in the post-1980 Irpinia earthquake reconstruction phase (Law No. 219/1981).

From a territorial perspective, land use patterns reveal that 41.8% of the area is devoted to agriculture and 32.5% is forested [3]. However, the abandonment of traditional rural livelihoods has contributed to environmental degradation, increased exposure to seismic and hydrogeological risks, and the erosion of local ecological knowledge. The 1980 earthquake constitutes a critical historical juncture, reconfiguring governance structures and reshaping socio-economic trajectories.

Historically, Alta Irpinia functioned as a nodal point in mobility and exchange networks, integrated into Roman road systems and pastoral transhumance routes such as the Regio Tratturo. The progressive transformation of spaces such as the Formicoso plateau—from agricultural and pastoral commons into infrastructures for wind farms and high-voltage power lines—illustrates broader territorial shifts associated with the energy transition.

The present research conceptualizes wind energy expansion in Alta Irpinia as a process embedded within pre-existing structural marginalities. The central research question interrogates whether wind power development in this context reproduces historical patterns of territorial dispossession or enables alternative forms of governance and identity construction. The analytical framework draws on scholarship in energy justice [4,5], socio-spatial resistance and NIMBYism [6,7], and rural socio-environmental movements [8,9], situating Alta Irpinia within comparative debates on equitable and inclusive energy transitions.

Methodologically, the study employs qualitative fieldwork, combining semi-structured interviews with residents, civic associations, and municipal authorities. Empirical findings indicate that the unregulated proliferation of wind infrastructure has frequently diminished local agency, intensified spatial inequalities, and reframed rural territories as sites of resource extraction. These dynamics align with critiques of internal energy colonialism [8,10,11] and the concept of "green grabbing" [12], where environmental policy discourses legitimize the appropriation of land and resources.

This trajectory reflects broader patterns in energy transitions characterized by technocratic governance and limited public participation [4,5]. Comparative European cases reinforce these concerns: in the Netherlands, perceived procedural fairness shapes acceptance of wind energy projects [7], while in Galicia (Spain), procedural deficits have led to judicial suspension of projects despite general public support [13]. In the Italian context, Dechézelles and Scotti [14] interpret such contestations as manifestations of "energy populism" in resource-rich but politically marginalized areas, whereas Daniele *et al.* [15] demonstrate that local opposition does not necessarily correlate with electoral realignments, challenging reductionist NIMBY framings.

Alternative governance arrangements—such as community-led or ecopreneurial energy initiatives—offer potential counterpoints, though they remain structurally constrained [16]. Data from the Environmental Justice Atlas confirm that renewable energy conflicts often pivot on demands for recognition, territorial rights, and procedural justice [8,9]. International parallels, such as the Piauí case in Brazil [17], highlight that distributive and procedural justice deficits—particularly concerning landscape impacts, compensation regimes, and participation rights—are recurrent drivers of contestation.

The evidence underscores the necessity of reframing energy transition policies as socio-political processes rooted in territorial justice. This entails moving beyond centralized and technocratic paradigms toward participatory, place-based models that integrate local knowledge systems, cultural memory, and social attachments [5,6].

The paper proceeds as follows: Section 1 reviews wind energy policy in the Campania region; Section 2 examines the spatial and institutional dimensions of wind development in Alta Irpinia; Section 3 outlines methodological protocols; Section 4 presents empirical findings on governance, socio-economic impacts, and landscape transformations; Section 5 discusses policy implications for equitable and territorially sensitive energy transition strategies. The research was conducted under a contract with the Department of Earth and Environmental Sciences (DISAT) at the University of Milano-Bicocca, in collaboration with the Department of Sociology and Social Research, integrating field data with interdisciplinary insights from energy studies and rural sociology.
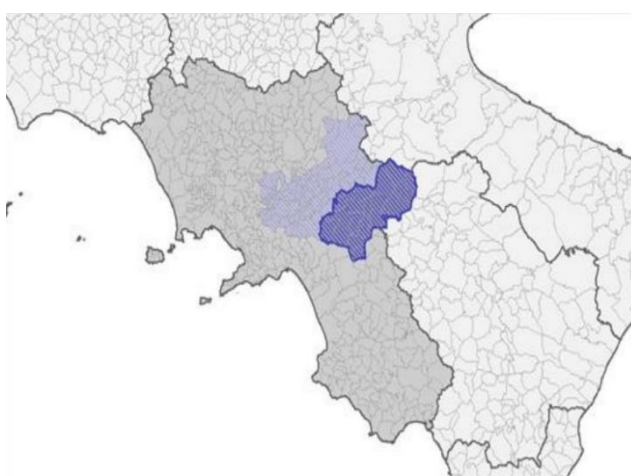

Figure 1. The geographical location of Alta Irpinia (in dark blue) within the Province of Avellino (in light blue) and the Campania Region (in dark grey) [18].

2. Wind energy in Campania

The year 2023 marked the highest recorded global average temperature (14.98 °C) [19], intensifying policy imperatives for accelerating decarbonization trajectories toward 2030 and 2040 targets [20]. Within this context, Italy's wind energy deployment remains insufficient to align with national renewable capacity objectives. As of 2023, the country hosts 7,449 wind turbines, with an installed capacity of 12,051 MW and an annual output of approximately 23.4 TWh, equivalent to the electricity demand of 23 million people [21]. Although production increased by 4.6% between 2022 and 2023 [21], such growth rates are inadequate for achieving the planned expansion to 250 GW of renewable capacity by 2035 [22].

Wind generation is spatially concentrated in the country's southern regions, which account for 96% of national capacity. Campania ranks third nationally in installed capacity and second in total output [23]. As an early adopter of wind technologies in the 1990s, Campania currently operates 1,184 turbines with a combined capacity of 1,903 MW [21]. Recent developments have included utility-scale projects (e.g., Lacedonia, 50 MW; Foiano di Val Fortore, 15 MW) as well as small-scale micro-wind installations [23].

Between 2018 and 2022, approximately 600 MW of capacity received authorization, with repowering projects replacing older turbines with fewer but higher-efficiency models [23].

Despite this technical progress, regulatory and procedural constraints persist. A key barrier is the absence of the implementing decree defining "Suitable Areas" for wind deployment, as mandated by Legislative Decree No. 199/2021. The 2023 draft version of the decree proposes restrictive spatial criteria, such as a 3 km exclusion buffer from protected areas—substantially exceeding the 500 m limit applied to solar photovoltaic installations [23]. The reliance on inaccurate wind resource mapping further complicates and delays authorization procedures.

Sectoral stakeholders, including *Legambiente* and the National Association of Wind Energy (*ANEV*), have advanced policy proposals aimed at overcoming these constraints. Recommendations include regulatory simplification, formal designation of suitable areas by 2030, expanded public participation, installation of at least 6 GW of offshore capacity, and the creation of a national coordinating body for wind development [23].

Legislative interventions have also reshaped land-use governance. The *Decreto Semplificazioni* under the Draghi administration repealed Article 7-bis, comma 2-ter of the *Codice dell'Ambiente*, thereby permitting wind and solar installations on agricultural and forested land [24,25]. While this measure is intended to accelerate renewable energy deployment (*Fonti Energetiche Rinnovabili*, *FER*), it simultaneously opens rural territories to external corporate investment, with potential repercussions for natural and cultural heritage conservation. In Alta Irpinia, these dynamics threaten the viability of traditional agricultural systems, such as wheat cultivation.

This policy trajectory diverges from the 2014-2020 EU-Italy Partnership Agreements, which promoted low-impact renewable integration in ways that respected rural identities and landscape values. Current frameworks risk reconfiguring inner areas such as those in Campania into energy production enclaves characterized by limited local economic spillovers and disproportionate environmental and cultural costs.

2.1. Economic and employment impacts on the territory

Recent socio-economic indicators underscore persistent structural weaknesses in Campania's labor market. According to the 2023 *BES* report by ISTAT, the employment rate for individuals aged 20–64 was 48.4%, 17.9 percentage points below the national average, while the rate of unmet labor force participation reached 32.3%, more than twice the national figure (14.8%) [26]. Youth unemployment and inactivity are particularly acute: the NEET rate (15–29 years) stands at 26.9%, compared to 16.1% nationwide [26]. These disparities point to the need for targeted labor market interventions and position renewable energy development, particularly wind power, as a potential instrument for reducing regional employment gaps.

Sectoral projections reinforce this potential. The 2023 *Qual Buon Vento* report estimates that the wind industry could generate approximately 67,200 new jobs in Italy by 2030, of which around 8,000 could be located in Campania [23]. The *GreenItaly 2024* report ranks Campania fifth nationally for eco-sector employment, with 152,390 "green job" contracts signed in 2023 [27]. These data indicate that the sector can contribute to sustainable regional development by fostering high-quality employment and enhancing specialized skill sets.

Wind energy development demands a broad spectrum of technical and managerial competencies, spanning design, digital monitoring, operational management, and maintenance. Priority occupational profiles include maintenance technicians, plant operators, project managers, and community engagement specialists, the latter being crucial for embedding renewable infrastructures within local socio-cultural contexts. Furthermore, repowering and revamping processes generate additional labor demand in circular economy activities, particularly in the recovery, recycling, and repurposing of decommissioned turbine components.

3. The case of Alta Irpinia

Over the past two decades, the Province of Avellino has undergone substantial wind energy expansion, accounting for 6.8% of Italy's total production by 2017, ranking third nationally after the provinces of Foggia and Potenza [28]. Within this provincial framework, Alta Irpinia constitutes a critical case for examining the spatial, socio-economic, and governance dynamics of the national energy transition.

The area hosts approximately 403 large-scale wind turbines and around 50 smaller installations, with an aggregated installed capacity of 600 MW—exceeding the estimated provincial electricity demand of 400 MW (as reported by the Mayor of Calitri, Di Maio). Authorized plans for an additional 113 turbines could increase capacity by more than 651 MW (Table 1), further consolidating Alta Irpinia's strategic significance in Italy's renewable energy geography.

The territory also functions as a testing ground for renewable infrastructure deployment in historically marginal inland regions, contributing both to national and EU decarbonization objectives. Planned energy storage facilities in the Formicoso plateau [29,30] are projected to enhance grid stability by mitigating overproduction-related curtailments and reducing turbine downtime, thus improving operational efficiency.

Wind turbine distribution in Alta Irpinia is spatially uneven, with a marked concentration in municipalities along the Campania-Apulia-Basilicata border, particularly on the Formicoso plateau. Bisaccia alone hosts 170 turbines (200 MW), followed by Lacedonia (140 MW), while other municipalities have no installations.

Ongoing technological upgrades reflect broader sectoral trends. The Bisaccia repowering project, for example, proposes replacing 47 aging turbines with a smaller number of high-efficiency units, resulting in a net capacity increase of 33 MW. While such interventions can reduce the physical footprint of wind farms, they do not eliminate local concerns regarding landscape alteration and cultural heritage impacts.

The transition toward larger-scale machines—up to 7.2 MW capacity on 120-meter towers—aligns with global efficiency imperatives but intensifies socio-territorial tensions, particularly in areas officially designated as "saturated" by the Campania Region (Table 2).

Job creation remains limited. Journalist Forte estimates around 150 people are employed in turbine maintenance in Bisaccia, one of the most affected municipalities. These jobs, while important, are few and often short-term, raising questions about how local communities benefit from the energy transition.

Alta Irpinia is now a central actor in Italy's renewable energy landscape, not just a passive host. Yet the high concentration of turbines and rapid technological change bring challenges tied to spatial justice, governance, and long-term sustainability—topics discussed further in Section 5.

Table 1. Summary prepared by the Mayor of Calitri, M. Di Maio, for the meeting of November 11, 2024, with Campania Region Vice President F. Bonavitacola. The table provides the first systematic overview of wind power in Alta Irpinia, including the number of turbines, total installed capacity, and ongoing projects under review. It was later revised and updated by A. Sibilia.

	Completed projects in Alta Irpinia						Ongoing projects in Alta Irpinia				
Municipality	Company	Installation date	Installed wind turbines	Unit power (MW)	Total power (MW)	Total installed capacity (MW)	Company	Planned wind turbines	Unit power (MW)	Total power (MW)	Total power (MW) to be installed
Calitri			0	0	0		Parco eolico Calitri	6	6,2	37,2	
						0	Hubbe	2	3	6	139,2
							Electric Power S.p.A.	16	6	96	
Teora			8	0,8	0,8	0,8		5	5	10	10
Conza della Campania			10	3,45	34,5	34,5	Ecoenergia S.r.l.	14	3,45	48,3	48,3
Monteverde			9	1	9			4	3,75	15	
						48	SKI 20 S.r.l.	4	6,2	24,8	39,8
Frigento			11	3,5	39			6	6,6	39,6	39,6
Guardia Lombardi			7	0,8	5,6	8,6				21	51
			Agrivoltaics		3			5	6	30	
Vallata	FRIEL	2012	24	2	48		RWE Renewable Italia S.r.l.	5	7,2	36	
	Morano Valter Donato	2014	1	0,9	0,9	52,5	RWE Renewable Italia S.r.l.			29,9	95,3
	SIPEV	2014	6	0,6	3,6		Energy solar 1 S.r.l.			29,4	
Aquilonia			21			48	SKI 20 S.r.l.	3	6,2	18,6	18,6
Lacedonia						140	SKI 20 S.r.l.	3	6,2	18,6	102,6
			123		140		AREN Green S.r.l.	14	6	84	
Bisaccia						200	Ecopower S.r.l.	12		43,64	106,64
			170				ERG wind 4	14	4,5	63	
Andretta			13			40					
			403			**572,4**		**113**	**5,76** Average power		**651,04**

Table 2. List of municipalities in Campania with a high concentration of wind farms [31]. Municipalities located in Alta Irpinia are highlighted in bold.

Province	Municipalities
Avellino	**Andretta**
Benevento	Baselice
Avellino	**Bisaccia**
Avellino	Casalbore
Salerno	Castelnuovo di Conza
Caserta	Ciorlano
Benevento	Durazzano
Benevento	Foiano di Val Fortore
Benevento	Ginestra degli Schiavoni
Avellino	Greci
Avellino	**Lacedonia**
Benevento	Molinara
Avellino	Montaguto
Benevento	Mantefalcone di Val Fortore
Salerno	Ricigliano
Benevento	San Giorgio La Molara
Salerno	San Gregorio Magno
Salerno	Santomenna
Avellino	Savignano Irpino
Avellino	Scampitella
Avellino	Vallata
Avellino	Vallesaccarda

3.1. The wind power conflict: intersections of socio-economic, political, and cultural dimensions

The expansion of wind energy infrastructure in Alta Irpinia illustrates a broader pattern of socio-environmental transformation driven by the largely unregulated rollout of renewable energy projects. This transformation has entailed the industrialization of rural landscapes and the emergence of tensions between local communities and external economic actors. The conflict centers on competing environmental ontologies—conceiving the environment as *Umwelt* (a functional, resource-oriented system) *versus Lebenswelt* (a shared, culturally embedded life-world). Initially framed as a conventional case of NIMBYism ("not in my backyard") [32], local opposition has increasingly been interpreted through the lenses of environmental justice and social equity [33], emphasizing institutional trust, perceived fairness, and the quality of participatory processes as critical determinants of acceptance [34].

The shift toward market-oriented renewable energy models—embedded within the global "green economy"—has often entailed the commodification of land, privileging its role as a vehicle for profit generation rather than as a collective resource [35]. In Alta Irpinia, this shift has produced extractive dynamics with implications for public health [36], social cohesion [37], and cultural identity. The area's

economic decline and demographic shrinkage have rendered it attractive to external capital, with profitability linked less to energy productivity and more to the exploitation of low-cost, peripheral territories [35,38]. These processes exclude local actors from both governance and economic benefits, reinforcing perceptions of dispossession and fostering ecological conflict.

From a political economy perspective, these developments reflect structural features of Italian capitalism: top-down development strategies, the marginalization of rural areas, and the subordination of southern regions to centralized energy agendas [39,40]. The resulting transformations align with concepts such as "accumulation by dispossession" [41], "landscape grabbing" [42], and "territory grabbing" [43], which encompass both material appropriation and the erosion of community decision-making capacity [44]. Public policy frameworks have often privileged energy-sector investment over equitable territorial development, reproducing entrenched regional disparities.

Resource extraction for distant urban-industrial centers has deepened structural exploitation and, in certain cases, attracted criminal networks [45], reinforcing patterns of socio-economic marginalization and territorial stigmatization in Southern Italy [46]. The Alta Irpinia case can thus be read as an instance of internal colonialism within Italy's ecological transition [47]. This dynamic is sustained through legal and economic mechanisms: multinational developers secure land leases under asymmetrical contractual conditions, while dominant policy narratives of efficiency and climate urgency legitimize the exclusion of local stakeholders from governance. Such tensions exemplify "Green *vs.* Green" conflicts, where climate mitigation objectives conflict with rural social, cultural, and ecological values [48] (Figure 2). In line with *Green Political Thought*, these cases highlight the need for democratic deliberation in environmental decision-making [49], with opposition arising from perceived procedural and distributive injustices rather than anti-renewable stances [50].

Figure 2. Conza della Campania, rebuilt after the 1980 Irpinia earthquake, with the Sella di Conza—now hosting a wind farm—In the background. The image symbolizes the shift from post-disaster reconstruction to energy-driven redevelopment, raising issues of memory, identity, and territorial appropriation (Photo by A. Sibilia, December 27, 2024).

The imposition of global energy strategies via national frameworks [51] has further constrained local self-determination, with conflicts reflecting deeper socio-political and ecological tensions [52]. Regulatory weaknesses have facilitated the proliferation of wind farms and associated infrastructure, such as high-voltage transmission lines. Early developments—including the first Campania wind farm in Bisaccia (1992)—expanded rapidly under Regional Decree No. 68/2008, supported by Legislative

Decree No. 387/2003 (Art. 12), which designated wind farms as works of "public utility" and thus superseded earlier, more restrictive provisions (*D.Lgs.* No. 302/2002; *DPR* No. 327/2001).

Civil society mobilization intensified between 2015 and 2016, with environmental committees drawing attention to land appropriation, ecological degradation, visual intrusion, reduced setback distances from residences (200 m, *DM* 10 Sept. 2010), noise pollution, disruption of avian migration routes, and increased hydrogeological risk in a seismically active area [47]. All wind farms in the area are privately owned, with no benefit-sharing mechanisms for local communities [52]. In 2015, the conflict escalated with 14 recorded violent incidents—including arson and armed attacks—prompting intervention by the national Anti-Mafia Commission [53].

Policy responses included a provincial moratorium in 2014 (*Delibera* No. 52) [54], supported by 18 municipalities by 2015, and Regional Law No. 6/2016, which temporarily suspended authorizations in the Province of Avellino pending adoption of the new Regional Energy Plan (*PEAR*). Subsequent municipal initiatives sought an extension of the moratorium, inclusion in the *PEAR* process, and the creation of dedicated territorial planning instruments [55].

The most recent controversies center on large-scale storage and repowering projects. A proposed 100 MW/400 MWh Battery Energy Storage System (BESS) in the Formicoso plateau—approved by the Ministry of the Environment in October 2023—has raised concerns due to its location near UNESCO-listed cultural heritage sites, residential areas, and agricultural lands [29,56,57]. Local organizations have formally objected, citing risks to health, agriculture, and cultural landscapes, and have submitted cartographic evidence to the Ministry of Culture.

While no formal provincial moratorium is currently in place, legal challenges and civic mobilization have delayed several projects, including the successful blocking of expropriations in Conza della Campania in 2023 [58]. Nonetheless, corporate-led renewable energy initiatives continue to advance under conditions of regulatory ambiguity, as exemplified by the June 2025 repowering proposal for the largest wind farm in Alta Irpinia (Bisaccia-Andretta-Vallata), which would replace 35 turbines (70 MW) with 18 larger units (120 MW) [59].

Overall, the Alta Irpinia case underscores critical governance questions regarding democratic legitimacy, distributive justice, and the socio-ecological sustainability of energy transitions in peripheral territories [60].

4. Exploratory investigation methodology: interviews with local "key informants"

This study adopts a qualitative exploratory methodology based on semi-structured interviews with key local informants. The aim is to explore community perceptions of wind farm development in Alta Irpinia, focusing on socio-economic and environmental impacts. Interviews conducted between December 2024 and January 2025 were analyzed to identify recurring themes and local tensions related to the energy transition.

4.1. The data collection technique: the semi-structured exploratory interview

The research examines the socio-cultural impacts of wind energy development in Alta Irpinia, situating the case within broader processes of territorial transformation. Drawing on the ISPRA study on wind perception in Apulia [61], the analysis focuses on how renewable energy projects intersect with local

identities, economic vocations, and conflict dynamics. While national policy frameworks broadly support renewable energy expansion, local opposition is frequently reduced to NIMBYism [32], a framing that risks obscuring structural and place-specific issues [62].

The methodological design integrates semi-structured interviews with the systematic review of local sources, including press coverage, civic committee documents, and regulatory materials (see Section 3.1). This qualitative approach facilitates the identification of stakeholders' values, perceptions, and worldviews, enabling a reconstruction of the cognitive and affective dimensions underpinning local positions [63].

Semi-structured interviews were selected to balance thematic focus with narrative flexibility [64], allowing for the collection of socio-demographic information alongside experiential accounts.

This methodological framework supports the comparative analysis of divergent perspectives, elucidating the underlying tensions between tradition and innovation that structure the conflict. In foregrounding local narratives, the study captures the perceived cultural and social costs of the progressive transformation of Alta Irpinia into an energy monoculture, with implications for its agricultural and tourism-based identity. The approach thus generates empirical data while also functioning as a critical tool to examine the interaction between development strategies and the preservation of local traditions.

4.2. The local "key informants" interviewed

In social research, "key informants" are individuals who, due to their role or expertise, can offer valuable insights into specific phenomena [65]. They are not necessarily direct actors in the events studied, but their knowledge of the local context makes them crucial for understanding its dynamics.

This study adopted a purposive sampling strategy to ensure the inclusion of the most relevant social dimensions. Selection criteria followed three main axes: (1) direct experience or professional role in the local context; (2) active engagement in the wind energy debate; (3) diversity in social role, gender, age, and education.

Three main groups of key informants were identified: (1) civil society actors (farmers, landowners, members of associations involved in cultural or environmental protection); (2) political and administrative representatives (mayors and a provincial councillor); (3) energy sector professionals (involved in the planning and management of wind projects).

The third group is underrepresented, as several professionals and companies declined participation despite repeated invitations. This may reflect a broader lack of transparency and limited public engagement in the energy sector, especially in contested areas like Alta Irpinia. Therefore, the analysis focuses mainly on community and institutional perspectives.

Thirteen interviews were conducted between December 5, 2024, and January 2, 2025 (see Table 3). As detailed in Section 4.1, a semi-structured format was used to ensure consistency across interviews while allowing participants to elaborate freely.

Each interview explored seven core themes: (1) environmental awareness; (2) perceived environmental and socio-economic impacts; (3) access to information and participation; (4) knowledge of current or planned projects; (5) evaluation of authorization procedures; (6) role of wind energy in the energy mix; (7) reflections on scale, governance, and self-production.

Interviews were conducted based on participants' preferences: eight in person, one via video call, two by phone, and two in written form. All participants gave informed consent, and ethical standards regarding privacy and anonymity were respected.

Table 3. List of interviewed "Key Informants". The data is structured according to the following variables: type of interview track, gender, age range, educational background, and professional position.

				List of interviewed "Key Informants"		
Type of interview track	Interviewees	Gender	Age range	Educational background	Professional position	Date on which the interview was conducted
1	*Interviewee No. 1*	M	36–50	High school degree	Member of association	December 5, 2024
1	*Interviewee No. 2*	M	26–35	Post-graduate degree	Resident in Alta Irpinia	December 6, 2024
1	*Interviewee No. 3*	M	51–65	High school degree	Member of association	December 20, 2024
1	*Interviewee No. 4*	M	> 65	Post-graduate degree	Member of association	December 20, 2024
1	*Interviewee No. 5*	M	36–50	Post-graduate degree	Member of association	December 26, 2024
1	*Interviewee No. 6*	F	26–35	Post-graduate degree	Employee in the energy industry	December 27, 2024
1	*Interviewee No. 7*	M	36–50	Post-graduate degree	Member of association	December 28, 2024
1	*Interviewee No. 8*	F	> 65	High school degree	Member of association	December 28, 2024
1	*Interviewee No. 9*	M	> 65	Post-graduate degree	Resident in Alta Irpinia	December 29, 2024
1	*Interviewee No. 10*	M	51–65	High school degree	Member of association	January 2, 2025
1	*Interviewee No. 11*	F	36–50	Post-graduate degree	Member of association	January 2, 2025
2	*Interviewee No. 12*	M	51–65	High school degree	Local government official	December 23, 2024
2	*Interviewee No. 13*	M	> 65	High school degree	Local government official	December 27, 2024

4.3. The processing of interviews

All interviews were fully transcribed, preserving original expressions to maintain the communicative depth of the participants. The early analysis showed that wind farms significantly affect the socioeconomic structure of the studied areas.

Initial findings revealed the limits of simplistic models—such as the "supporters *vs.* opponents" or "risks *vs.* benefits" frameworks—and the widespread use of the "NIMBY syndrome". While these offer a starting point, they fail to capture the complexity of the issues. To address this, a systematic analysis was conducted, allowing comparison across interviews and highlighting both shared and divergent views.

Six main thematic areas were identified: (1) economic incentives and top-down dynamics; (2) impacts on the agricultural market; (3) deregulation and political dimensions; (4) environmental and landscape effects; (5) technological developments and wind farm life cycles; and (6) transitions toward new development models.

These categories supported a structured analysis of the narratives, which showed broad consistency in views and suggestions. The themes were also examined according to sociodemographic variables—gender (male, female), age (18–25, 26–35, 36–50, 51–65, over 65), education (elementary/junior high school degree, high school degree, bachelor degree, post-graduate degree), and social roles (members of associations, local government officials, employees in private companies)—to contextualize findings.

This method provided a nuanced understanding, avoiding simplifications and emphasizing the actors' perspectives. It laid the groundwork for critically interpreting the relationships between communities, institutions, and wind energy development.

5. Energy, power, and governance: a socio-political analysis of interview narratives

This chapter examines how wind energy development in Alta Irpinia intersects with local power dynamics and governance. Drawing on interview data, it reveals patterns of exclusion, socio-economic inequality, and territorial injustice, showing how national energy policies often overlook the lived realities of rural communities.

5.1. The economic lever as a tool of penetration and the colonial top-down approach

The expansion of wind turbines in Alta Irpinia illustrates a broader dynamic of territorial and economic exploitation in areas long affected by depopulation and institutional neglect. These territories have become targets for multinational energy companies, which exploit regulatory loopholes and the limited capacity of local governments to impose development models disconnected from local needs and identities.

As Interviewee No. 12 notes, turbines are often installed *"along municipal borders"* (Field interview, Interviewee No. 12, 33:27), creating a *"domino effect"* (Field interview, Interviewee No. 12, 33:35) that spreads into adjacent territories, disrupting land use and generating fragmentation. He highlights the flaws in compensation systems, recalling the case of a farmer whose land lies just meters from a turbine outside his municipality: "*I still bear the damages. So why can't I also have a turbine, along with the corresponding compensation of 8,000 or 10,000 euros per year?*" (Field interview, Interviewee No. 12, 33:43).

The peripheral status of the region reinforces its vulnerability. Interviewee No. 8 refers to Alta Irpinia as *"border areas that no one likes"* (Field interview, Interviewee No. 8, 15:25), where appropriation by external actors is easier. Interviewee No. 7 explains that *"villages of 2,000–3,000 inhabitants located 15–20 kilometers apart"* (Field interview, Interviewee No. 7, 17:26) are seen as unlikely to mobilize resistance, allowing development to proceed largely unopposed.

According to Interviewee No. 12, the presence of turbines contributes to *"impoverishment"*, triggering *"mechanisms of degradation in the territory"* (Field interview, Interviewee No. 12, 12:21) and eroding trust in the land's potential. Rather than supporting local regeneration, wind development often reduces the territory to a mere site for energy production.

Interviewee No. 5 recalls how companies offered *"5,000–6,000 euros per turbine per year"* (Field interview, Interviewee No. 5, 03:15) to landowners, often targeting marginal plots. While initially perceived as an opportunity, this led to what he describes as *"wild wind energy"* (Field interview, Interviewee No. 5, 04:09)—a system lacking proper environmental and landscape planning, with negative consequences for both people and ecosystems.

Although royalties were intended to redistribute benefits, their impact has been limited. Interviewee No. 10 notes that *"these funds have rarely been used for structural projects that could improve the well-being of local communities"* (Field interview, Interviewee No. 10, 37:59). Interviewee No. 13 explains that municipalities often accept wind projects *"due to budgetary constraints, in order to balance their accounts"* (Field interview, Interviewee No. 13, 03:20). However, as Interviewee No. 1

criticizes, funds are frequently spent on short-term initiatives like *"organizing festivals or local fairs"* (Field interview—written, Interviewee No. 1) instead of sustainable development.

This imbalance has fostered widespread perceptions of injustice. A recurring concern is the exclusion of residents from decision-making. Interviewee No. 12 emphasizes that people are *"subjected to decisions without being able to participate"* (Field interview, Interviewee No. 12, 07:50), fueling institutional distrust and weakening support for energy transition policies.

For Interviewee No. 8, these dynamics resemble a form of internal colonization. Wind energy projects not only extract value from the land but also erode the conditions for rural life, accelerating depopulation and making agriculture unsustainable. He links this to forced urban migration: *"What's the cycle? It's that we have to go to Milan to work for them because they own the houses, they have thousands of apartments to rent"* (Field interview, Interviewee No. 8, 09:49). He describes this process as a form of *"enslavement"* (Field interview, Interviewee No. 8, 10:42), where local people lose both land and autonomy, while wealth accumulates in urban centers.

Marginalization also takes symbolic and coercive forms. Interviewee No. 8 recounts that a road between two turbines was deliberately curved *"to inflict maximum damage on the farmer who opposed them"* (Field interview, Interviewee No. 8, 39:28), showing how dissent can be punished through territorial interventions.

As land is lost, residents are often pushed into *"precarious living conditions and unsustainable costs"* (Field interview, Interviewee No. 8, 09:30), replacing rural autonomy with urban insecurity. The result is a dual impoverishment: the countryside loses its productive and cultural vitality, while displaced individuals face new vulnerabilities.

Mechanisms intended to support democratic participation, such as the *Conferenze di Servizi*, have proven weak. Interviewee No. 4 refers to them as a *"remnant of territorial democracy"* (Field interview, Interviewee No. 4, 01:39:45), but developers often understate the cumulative impact of projects. *"They never show you the wind farm in relation to the others already built"* (Field interview, Interviewee No. 12, 32:07). Interviewee No. 13 adds that *"most mayors consider attending* Conferenze di Servizi *unnecessary"* (Field interview, Interviewee No. 13, 04:01), assuming that outcomes are already predetermined. Yet he stresses that political will and institutional vigilance can still prevent harmful developments.

The case of Alta Irpinia shows how wind energy, when poorly regulated and imposed from above, can reproduce dynamics of internal colonization under the guise of sustainability. Agriculture, long central to the local economy, has been especially affected. The spread of turbines has disrupted traditional land use and deepened socio-economic inequalities.

To move toward a fairer energy transition, it is essential to rethink current development models. Local communities must no longer be treated as passive recipients of external decisions, but recognized as active, informed actors capable of shaping the future of their territories.

5.2. The impact of wind energy on the agricultural market

The installation of wind turbines on farmland in Alta Irpinia has profoundly affected the local agricultural economy, disrupting long-standing balances and amplifying existing inequalities. According to Interviewee No. 5, *"Landowners who initially welcomed wind turbines on their lands in Alta Irpinia gained additional income from economic incentives tied to renewable energy. These revenues allowed*

some farmers, often hosting six or seven turbines on their properties, to significantly reduce the selling prices of agricultural products such as wheat, milk, straw, and hay. Consequently, this undermined the bargaining power of farmers who continued to depend solely on traditional agricultural activities for their livelihoods" (Field interview, Interviewee No. 5, 14:15).

This uneven distribution of financial benefits has intensified market distortions, especially in a context already marked by land concentration. Interviewee No. 10 questions: *"Did the arrival of wind energy transform agriculture in these areas, or was everything already transformed?"* (Field interview, Interviewee No. 10, 43:16) His remark points to a structural condition in which a few large landowners have long dominated local grain production. Wind energy revenues, rather than addressing these disparities, have reinforced them, enabling beneficiaries to further lower prices and marginalize small-scale farmers.

Interviewee No. 5 elaborates on this dynamic, noting that *"some can afford to sell wheat even at 30 euros per quintal because they receive subsidies from wind turbines, thereby distorting the wholesale market"*. He refers to this imbalance as *"economic doping"* (Field interview, Interviewee No. 5, 15:27), describing a mechanism in which those without turbine revenues struggle to compete, despite relying entirely on agriculture for survival. This process exacerbates the fragility of smaller producers, deepening socio-economic divides within the sector.

At the same time, Interviewee No. 11 raises a critical issue: *"It is essential to understand whether these agricultural lands affected by the turbines have indeed experienced reduced productivity or not? Because, perhaps, they compensate for it"* (Field interview, Interviewee No. 11, 43:59). While wind revenues may partially offset the loss of arable land, the broader implications remain concerning. As he adds, *"Land is taken away, and if we count the number of turbines, the figures are staggering—it's a significant amount of land withdrawn from agriculture"* (Field interview, Interviewee No. 11, 44:32). The necessity of *"buffer zones"* (Field interview, Interviewee No. 11, 44:35) around turbine sites further reduces cultivable space, constraining agricultural potential.

The absence of reliable data complicates any comprehensive assessment. As Interviewee No. 10 observes, *"There is a notable absence of quantitative sociological data. Wind energy is likely altering the socioeconomic model"* (Field interview, Interviewee No. 10, 44:52). Without systematic studies, the full impact on production methods and community livelihoods remains difficult to determine.

Overall, wind energy has contributed to a reconfiguration of the local rural economy, reinforcing a dual structure. On one side, landowners benefiting from turbine revenues can afford to lower prices and diversify income; on the other, small farmers face increasing pressures, often without institutional support. This situation calls into question the sustainability of what Interviewee No. 10 calls the myth of *"healthy rurality"*, emphasizing that *"traditional agricultural labor also significantly shapes the landscape"* (Field interview, Interviewee No. 10, 43:42).

Addressing these challenges requires deeper investigation, combining both quantitative and qualitative approaches. Yet technical analysis alone is not enough. The broader political context—marked by deregulation and weak democratic oversight—has facilitated the unchecked expansion of wind energy, often privileging private interests over the needs and values of rural territories.

5.3. Deregulation of the phenomenon and its political dimension

The deregulated expansion of wind energy in Alta Irpinia has turned the region into a testing ground for speculative energy practices, marked by fragmented governance and the exclusion of local communities from key decisions. As Interviewees No. 3 and 4 note, *"The existing regulations are deliberately deficient and maximally deregulated"* (Field interview, written part, Interviewees No. 3 and 4), allowing companies to operate freely. This legal vacuum has enabled abuses, where, *"everything is possible as long as no one files a complaint"* (Field interview, written part, Interviewees No. 3 and 4). The De Meo *vs.* Ivpc case, which led to the dismantling of a turbine in Bisaccia, exemplifies a system where *"judicial intervention becomes the last line of defense"* (Field interview, Interviewee No. 4, 30:30) (Figure 3).

Figure 3. The only wind turbine in Italy decommissioned by court order after a citizen's legal action, located in the Bisaccia countryside. The image symbolizes local resistance and the potential for community agency in energy governance (Photo by A. Sibilia, January 2, 2025).

Despite complaints filed by local committees – led by Interviewees No. 3 and 4—concerning oil leaks, scattered turbine components, and a fire that destroyed six hectares of farmland, institutional responses have been weak. As a result, several farmers lost cultivation rights and *PAC* (Common Agricultural Policy) subsidies. Moreover, *"Since the regulation on turbine clearance zones has never been clarified, the company installing the turbine is not held accountable"* (Field interview, written part, Interviewees No. 3 and 4).

This systemic failure reflects deeper political distortions. Interviewee No. 4 recalls the case of Fiorentino Sullo, a minister from Irpinia who proposed legislation to requisition peripheral urban lands to curb real estate speculation. *"The Democrazia Cristiana party discredited him, calling him a drunkard and homosexual, ultimately forcing his withdrawal"* (Field interview, Interviewee No. 4, 31:03). Such episodes reveal a longstanding tradition of undermining urban planning in favor of private and speculative interests.

The conversion of farmland into industrial zones has often occurred outside proper planning frameworks. Interviewee No. 4 explains that *"a 2011 law introduced a cadastral change once a plant is approved, officially reclassifying the land as industrial property"* (Field interview, Interviewee No. 4, 32:28), a mechanism referred to by Renzi government as *"imbullonati"* (Field interview, Interviewee No. 4, 32:44). An exception, he adds, was *"Mayor Di Maio, who enforced the* PUG *[General Urban Development Plan], ensuring compliance with strict zoning regulations"* (Field interview, Interviewee No. 4, 33:04).

The lack of regional planning has allowed turbines to proliferate in already saturated areas, severely affecting local agriculture. Interviewee No. 3 observes that *"a wind turbine does not only occupy the underlying space but also removes an entire hectare of agricultural land"* (Field interview, Interviewee No. 3, 06:28), which leads to the loss of *PAC* subsidies and new land remediation costs.

These developments go beyond environmental concerns, eroding democratic participation. As Interviewee No. 5 recounts, *"The local government officials accused us [Slow Food] of being an association that only knows how to say 'no'"* (Field interview, Interviewee No. 5, 13:07). Such dismissal of critical voices has enabled corporate dominance. Interviewees No. 3 and 4 add that *"the law on public utility"* has been exploited *"to transfer land from one private entity to another"* (Field interview, written part, Interviewees No. 3 and 4), excluding communities from governance and reinforcing private control over energy infrastructure.

Regional administrations have further failed to develop or implement effective planning tools. Interviewee No. 2 stresses that *"the crisis is not only environmental but stems from ineffective policies"* (Field interview, Interviewee No. 2, 23:02). Interviewees No. 3 and 4 add that many regions, including Campania, are *"in a state of omission regarding the protection of sensitive areas"*. Even in cases like Apulia, where a protection plan exists, *"state-level interventions can override it"*, as shown by the suspension of a plan following a ministerial appeal. They conclude that this *"reflects a loss of citizen centrality in state decision-making"* (Field interview, written part, Interviewees No. 3 and 4).

This regulatory void has enabled multinational companies to reshape rural territories. Even when the agricultural landscape was already simplified—*"monocultures of wheat and hay, lacking biodiversity"* (Field interview, Interviewee No. 10, 21:19)—the result of wind development has been what Interviewees No. 3 and 4 call *"electric landfills"* (Field interview, written part, Interviewees No. 3 and 4). These changes threaten not just the environment but the identity and meaning of place.

The social impacts are equally significant. Interviewee No. 1 reflects that *"people are tired of fighting against a system that does not listen"* (Field interview—written, Interviewee No. 1), highlighting a growing sense of disillusionment and isolation in inland communities. This frustration is compounded by a clientelist use of compensation funds aimed at *"monetizing the invasion"* (Field interview, Interviewee No. 4, 20:58), rather than supporting long-term development.

The Bisaccia-Deliceto power line case illustrates this. Though appeals led to some technical improvements—such as distance from homes and livestock—compensation funds were dramatically increased: *"From 450,000 to 1.8 million euros for Bisaccia, with further payments to other municipalities"* (Field interview, Interviewee No. 4, 20:51). This dynamic reveals how opposition becomes a bargaining tool rather than a pathway to structural change.

Moreover, Interviewee No. 4 notes that *"until 2011, energy companies were required to pay property taxes (IMU) under category D"* (Field interview, Interviewee No. 4, 27:47), a duty often ignored. This lack of accountability deepens distrust.

Community responses, while present, remain fragmented. Interviewee No. 10 acknowledges that *"on issues like wind energy or landfills, Irpinian communities exhibit moments of identity-driven pride"* (Field interview, Interviewee No. 10, 13:26), yet without a cohesive movement. Environmental activism is *"almost non-existent"* (Field interview, Interviewee No. 10, 23:20), and national organizations like *Legambiente* are often viewed as promoting *"unilateral optimism"* (Field interview, Interviewee No. 7, 13:35), overlooking the complexity of the local context.

This leads to a central paradox. While wind energy is widely perceived as an *"invasion"* (Field interview, Interviewee No. 10, 13:56), its reception might shift if economic returns were more substantial. As Interviewee No. 10 remarks, *"There is no doubt that the topic of wind energy is both hotly debated and deeply felt"* (Field interview, Interviewee No. 10, 13:42), but without fair compensation and inclusive governance, rejection is likely to persist.

The deregulation of the sector not only worsens social and economic inequality but also reshapes landscapes and cultural identities. The next section explores the environmental and aesthetic consequences of this transformation, and the tensions it generates between large-scale energy development and the preservation of Alta Irpinia's rural heritage.

5.4. Unregulated wind energy: landscape and environmental impact

The deployment of wind turbines in Alta Irpinia reveals how renewable energy development can drastically alter both the environment and the landscape. Although typically seen as sustainable, wind power in this region has generated widespread ecological and social consequences (Figures 4, 5, 6, 7, 8, 9).

Figure 4. The Formicoso plateau in the Bisaccia countryside, where wind turbines and wheat fields coexist. This contrast exemplifies the tension between traditional agricultural practices and the transformation of the rural landscape through energy infrastructure (Photo by A. Fasano, August 15, 2024).

Figure 5. Continuous rows of wind turbines stretching from the Formicoso plateau to the Tavoliere delle Puglie. The image illustrates the scale of territorial transformation and the emergence of energy monocultures in Southern Italy (Photo by A. Sibilia, December 20, 2024).

Figure 6. The Formicoso plateau in the Bisaccia countryside, a strategic site for wind energy development. The image highlights the impact of energy infrastructure on a historically agricultural landscape, raising questions about land use, identity, and local participation (Photo by A. Fasano, August 16, 2024).

Figure 7. Urbanization in previously untouched mountainous areas, driven by wind energy expansion. The image reflects the environmental impact and spatial transformations affecting inland rural regions (Photo by A. Sibilia, December 20, 2024).

Figure 8. Power line intersection in *contrada* Santa Veronica, Bisaccia, where high-voltage infrastructure intersects with traditional agricultural terracing. The image highlights the coexistence—and tension—between rural heritage and the demands of the energy transition (Photo by A. Sibilia, December 20, 2024).

Figure 9. Wind turbines and agricultural land in the Bisaccia countryside, with the mountains of the Monti Picentini Regional Park in the background. The image illustrates the spatial coexistence —and potential tension—between renewable energy infrastructure and traditional farming landscapes, offering visual insight into the territorial transformations examined in this study (Photo by A. Fasano, June 22, 2025).

Environmentally, turbines require massive installations: *"A steel pole measuring 150 to 200 meters, a concrete base weighing several tons, and large quantities of oil for the motor"* (Field interview, Interviewee No. 7, 00:13). These materials pose environmental risks, including oil leaks and the *"release of carbon microfibers due to wear"* (Field interview, Interviewee No. 3, 07:28). Interviewee No. 3 also reports *"an increase in gastrointestinal cancer near wind farms"* (Field interview, Interviewee No. 3, 09:54), though this remains an unverified personal observation.

Subterranean impacts have also been noted. Trenches up to 17 meters deep have reached aquifers, altering water availability. One farmer, for instance, *"Had to relocate his operations after turbines were installed, as the aquifer shifted, allowing poinsettia cultivation downstream"* (Field interview, Interviewee No. 4, 59:30).

Visually, turbines disrupt the rural aesthetic. *"There are serious issues in agriculture, as lands are subordinated to these turbines and access roads. Oil leaks from cabins are frequent"* (Field interview, Interviewee No. 13, 18:40). This underscores tensions between national energy agendas and local realities.

Interviewee No. 5 identifies poor planning along bird migration routes: *"Some wind turbines were installed along historic migratory paths"* (Field interview, Interviewee No. 5, 08:55), impacting biodiversity and local birdwatching economies. *"Our mission has always been guided by common sense"* (Field interview, Interviewee No. 5, 09:34), he adds, lamenting that Slow Food's proposals were ignored.

Collisions and habitat loss affect species like the Red Kite, as *"birds can't perceive fast-spinning blades, which may reach 200 km/h"* (Field interview, written part, Interviewees No. 3 and 4). Additional infrastructure—roads, cables, and night lights—further disturbs local fauna, especially in low-visibility conditions.

Alta Irpinia's former *"landscape uniformity"* has been *"completely disrupted"* (Field interview, Interviewee No. 7, 00:47) by turbines, often placed with little spatial planning. *"The expansion of wind turbines appears to be driven more by legal loopholes than by a coherent strategy; in fact, wind farms*

seem to have been launched from space" (Field interview, Interviewee No. 10, 01:26). Interviewee No. 11 notes that *"early turbines followed terrain lines, but newer ones seem random, sometimes reused and already worn"* (Field interview, Interviewee No. 11, 10:34).

This disorder creates what Interviewees No. 3 and 4 call the *"forest effect"* (Field interview, written part, Interviewees No. 3 and 4): visual overload from clustered turbines. The Decreto Ministeriale of 10 September 2010 mandates specific spacing (5–7 rotor diameters in prevailing wind direction), a provision confirmed by Constitutional Court rulings (No. 11/2014 and No. 275/2014) to reduce visual interference with cultural and landscape assets.

Wind farms also threaten archaeological heritage. *"The Regina Viarum passes through the wind farm area"* (Field interview, written part, Interviewees No. 3 and 4), part of the UNESCO-designated Via Appia. Many projects *"do not comply with protection norms"*, undermining the territory's archaeological and scenic value.

Though some, like Interviewee No. 10, appreciate the *"white, elegant second-generation turbines"* (Field interview, Interviewee No. 10, 02:34), he also notes a form of *"identity suffering"* (Field interview, Interviewee No. 10, 02:08) tied to lost spatial harmony. At night, the mood darkens: *"It feels like being in a cemetery with these red lights flashing"* (Field interview, Interviewee No. 8, 12:46). At the Regio Tratturo agritourism estate – a public bull breeding station over 150 years old—Interviewee No. 5 noted that *"a wind turbine nearby destroyed the harmony of the landscape"*, adding that it is also affected by *"the humming sound produced by the turbines"* (Field interview, Interviewee No. 5, 05:08).

Interviewees No. 3 and 4 describe this acoustic pollution as *"a cocktail of low-frequency noise, vibrations, and infrasound"* (Field interview, written part, Interviewees No. 3 and 4) that may cause *"wind turbine syndrome"* (Field interview, written part, Interviewees No. 3 and 4)—dizziness, insomnia, and cognitive issues [66,67].

Turbines placed too close to homes, often in breach of regulations, raise health concerns. *"Many turbines are dangerously close to residential areas"* (Field interview, Interviewee No. 7, 01:45). Weak national standards and deregulated fast-tracking limit oversight, especially in rural areas lacking legal and technical capacity. Meanwhile, residents face legal and financial barriers to opposing projects.

Multinational firms use their resources and influence to bypass local resistance. Low civic engagement, fueled by distrust in institutions, hampers collective action. Governance gaps also affect health: studies link turbine noise to cardiovascular issues [68] and increased suicide risk [69]. Shadow flicker—*"The shadow rotates continuously inside the house"* (Field interview, Interviewee No. 7, 01:26)—adds to mental strain [70,71].

Property devaluation is another effect [72]. A striking case involves Cairano's ring of scenic hills. *"This iconic rural landscape would be irreparably altered by new turbines"* (Field interview, Interviewee No. 12, 19:56), explains Interviewee No. 12. His opposition, supported by national media and civil society, sought to preserve its *"historic and culturally significant profile"* (Field interview, Interviewee No. 12, 19:46) (Figure 10).

Interviewee No. 9, a geologist and earthquake survivor, reflects on the erasure of memory: *"I remember my father's garden and an olive tree that still stands. Everything else is gone"* (Field interview—written, Interviewee No. 9). The landscape becomes a repository of identity. As Interviewees No. 3 and 4 stated, *"The landscape is not just a postcard—it is the road, the tree, the people"* (Field interview, written part, Interviewees No. 3 and 4).

Figure 10. Panoramic view of Alta Irpinia from the Cairano cliff, a landscape of high cultural value now at risk due to unregulated wind farm expansion. The image reflects key themes of the article, including territorial identity, speculative energy development, and the need for community-centered planning (Photo by A. Sibilia, August 25, 2024).

Neglecting these dimensions deepens trauma in already fragile areas. Interviewee No. 1 calls for *"removing turbines that exceed sustainability limits"* (Field interview—written, Interviewee No. 1), restoring landscapes and investing in local agriculture. *"Alta Irpinia has already given enough to national energy goals"* (Field interview—written, Interviewee No. 1), he states, urging rebalancing through tangible compensation.

Interviewee No. 2 warns: *"The territory risks being emptied, as seen in small villages"* and calls for *"community-based projects, not exclusionary mega-initiatives"* (Field interview, Interviewee No. 2, 14:41). Interviewee No. 12 emphasizes that *"*Comunità montane *[are local associations of municipalities in mountainous areas of Italy, aimed at promoting development and protecting the environment] are vital for environmental protection"* (Field interview, Interviewee No. 12, 09:12).

On tourism, Interviewee No. 11 argues it has been *"never truly considered a development pillar"* (Field interview, Interviewee No. 11, 47:30). Interviewee No. 10 critiques fragmented initiatives that *"use tourism as a pretext"* (Field interview, Interviewee No. 10, 48:37). Still, Interviewee No. 11 envisions demand for *"homogeneous landscapes"* (Field interview, Interviewee No. 11, 56:46), unlike those disrupted by turbine sprawl.

Interviewee No. 1, while affirming *"the role of Alta Irpinia in the energy transition"* (Field interview—written, Interviewee No. 1), also stresses the need to protect cultural and environmental heritage.

In conclusion, unregulated wind energy development has produced deep ecological, visual, and social transformations. As new technologies emerge, repowering and decommissioning must be strategically addressed to ensure that the transition is both just and sustainable, grounded in respect for communities and landscapes. The next section 5.5 will examine these future challenges and the possibility of repairing the damage already done.

5.5. New technologies and the future: from repowering to decommissioning of wind farms

The future of wind energy in Alta Irpinia raises complex challenges related to repowering, decommissioning, and long-term territorial sustainability. Repowering—replacing old turbines with more

efficient models—is often presented as a positive development. However, as Interviewee No. 13 emphasizes, *"In some locations I blocked them because they were too close to houses, in others because they were near forests, and in others because they were in* SIC *[Sites of Community Importance]"* in order to prevent an escalation in scale and environmental impact (Field interview, Interviewee No. 13, 04:43). Larger turbines (6–7 MW) may worsen visual and ecological disruptions.

A central issue concerns spatial planning. Existing policies do not adequately protect territories that are already saturated with installations. As Interviewee No. 13 explains, *"The new planning envisions the identification of suitable areas—it does not address saturated areas"* (Field interview, Interviewee No. 13, 10:23). To mitigate further impacts, Interviewee No. 11 suggests establishing *"buffer zones to limit the impact"* (Field interview, Interviewee No. 11, 01:07:39). In addition, there is growing awareness of *"the fragility of our territories"* (Field interview, Interviewee No. 11, 03:28), as emphasized by the same interviewee.

This raises a broader dilemma: should new installations be banned in saturated zones, or should development be confined to them to spare other areas? Concentrating impact might appear pragmatic but risks institutionalizing damage, framing certain territories as perpetually expendable. Conversely, extending development may replicate existing inequalities. These scenarios often overlook the cultural, emotional, and historical connections people have with the land.

Moreover, the idea of "repair" becomes problematic when the damage includes symbolic and intergenerational losses. Can memory and identity be restored through mitigation? Or does this discourse obscure the irreversibility of certain transformations?

As Interviewee No. 10 notes, road degradation worsens daily life: *"These roads crumbling toward the valley…"* (Field interview, Interviewee No. 10, 05:26). Interviewee No. 11 points out the overlap of turbine transport and rural uses, noting that *"the impact of wind energy transport is significant"* (Field interview, Interviewee No. 11, 06:03). Local infrastructure is unequipped to handle the strain, and repowering risks further deterioration.

Governance remains a critical challenge. As noted in Section 4.1, the exclusion of community voices has led to uneven development. *"Public-private instruments could provide a solution"* (Field interview, Interviewee No. 11, 01:19:30), says Interviewee No. 11, but only if transparent and inclusive.

A largely neglected issue is decommissioning. *"Does anyone seriously believe that these landowners have made the necessary provisions?"* (Field interview, Interviewee No. 10, 01:22:38) asks Interviewee No. 10. Leasing practices allow companies to sidestep future responsibilities. *"Wind companies prefer leasing […] avoiding costs for removal"* (Field interview, Interviewee No. 13, 08:14). Interviewee No. 10 warns that *"it is unlikely the concrete platforms will be removed"* (Field interview, Interviewee No. 10, 01:16:42), placing the burden on landowners.

Without regulation, end-of-life management may lead to environmental neglect. Interviewee No. 13 cites a case in which a Danish company transferred control to a local firm with *"a share capital of just 10,000 euros"* (Field interview, Interviewee No. 13, 07:22), questioning the accountability of such actors. Abandoned turbines become *"monuments to neglect"* (Field interview, Interviewee No. 11, 01:22:09), with economic and aesthetic costs absorbed by communities.

The lack of strategic planning reinforces a fragmented sector. *"Compared to structured models abroad, here it's a free-for-all"* (Field interview, Interviewee No. 10, 01:15:02). Despite this, Interviewee No. 11 sees potential in *"micro wind power […] integrating existing infrastructures with*

more rational planning" (Field interview, Interviewee No. 11, 01:20:32), offering a path toward environmentally sound and socially just development.

5.6. The transition towards a new development model

The energy transition, while framed as a response to the climate crisis, raises critical concerns about equity, governance, and sustainability. Several interviewees emphasize how the original values of environmentalism have been distorted. As Interviewee No. 10 notes, *"The principles originally advocated by the environmental movements of the 1980s have been subsumed by institutions and businesses"* (Field interview, Interviewee No. 10, 32:57). The widespread appeal of the term "green", he argues, has become a tool to *"maintain the status quo"* (Field interview, Interviewee No. 10, 33:50), with decisions *"not aligned with the common good but serving particular interests"* (Field interview, Interviewee No. 10, 34:53).

This co-optation is also evident at the international level. Referencing global climate negotiations, Interviewee No. 10 asserts that *"the COP [Conference of Parties] mechanisms are evidently ineffective"* (Field interview, Interviewee No. 10, 35:45), and that *"the problems of capitalism cannot be solved using capitalist tools"* (Field interview, Interviewee No. 10, 36:05). Market-based solutions are seen as insufficient to address the structural roots of the environmental and social crisis.

The interviews further underline the relationship between energy models and social organization. As Interviewee No. 10 affirms, *"An energy model brings with it a social model"* (Field interview, Interviewee No. 10, 37:52). Centralized systems, such as those used for nuclear energy, concentrate power and require *"the mechanization of the territory"* (Field interview, Interviewee No. 10, 38:29), thereby restricting democratic participation. A genuine energy transition, in his view, should promote *"a different way of living"* (Field interview, Interviewee No. 10, 35:05), rooted in equity, participation, and local autonomy: *"The key issue is social organization"* (Field interview, Interviewee No. 10, 40:09).

Interviewee No. 11 reinforces this view by highlighting how *"economic inequality is associated with social inequality"* (Field interview, Interviewee No. 11, 38:41). He observes that renewable infrastructures are frequently installed in economically marginal areas to serve more affluent regions, reproducing existing disparities. While he acknowledges that some residents may benefit in terms of employment, he underscores the need for redistributive justice and inclusive governance.

Interviewee No. 4 raises concerns about the erosion of traditional land stewardship: *"If you take the land away from the farmer who cares for it, you lose the work of care"* (Field interview, Interviewee No. 4, 01:06:39). Imposed infrastructures such as wind and agrivoltaic plants, he argues, sever the historical bond between communities and territory. This disconnection undermines sustainable practices and contributes to abandonment. He frames this process as *"an anti-capitalist struggle against financial and criminal capital, which abolishes the role of land reproducibility"* (Field interview, Interviewee No. 4, 01:08:15).

These reflections converge in a shared critique of the dominant transition paradigm. As Interviewee No. 10 observes, *"We are entirely immersed in a paradigm of capitalist management of the energy transition, which does not challenge the deep causes of the environmental and social crisis"* (Field interview, Interviewee No. 10, 35:21). Nonetheless, he sees in grassroots mobilizations and local resistance the potential to *"shift this front"* (Field interview, Interviewee No. 10, 35:40), despite current limitations.

Interviewee No. 11 introduces the idea of territorial reciprocity: *"Territories implementing genuine energy savings by consuming less should receive compensation"* (Field interview, Interviewee No. 11, 39:10). He stresses that a just transition requires not only technological innovation, but also new principles of redistribution and environmental responsibility: *"Authentic transition is achieved through behaviors, lifestyles, and environmental awareness"* (Field interview, Interviewee No. 11, 39:46).

Two complementary approaches emerge from the interviews. On the one hand, *energy democracy* promotes participatory governance and the empowerment of communities and cooperatives. On the other, *energy citizenship* encourages individual engagement, responsible consumption, and local initiative [73]. Integrating these perspectives may foster a more inclusive, decentralized, and culturally rooted transition.

5. Conclusion

This study set out to answer the following research question: h*ow is wind energy development reshaping the social, economic, and environmental fabric of Alta Irpinia, and to what extent does it reproduce or challenge historical patterns of territorial marginalization and governance?* The evidence gathered through documentary analysis and fieldwork clearly shows that the current model of wind energy deployment in Alta Irpinia tends to reproduce, rather than disrupt, entrenched dynamics of socio-environmental inequality, governance opacity, and territorial disempowerment.

While some local actors benefit economically from royalties and maintenance jobs, these advantages are highly unevenly distributed and often come at the cost of ecological integrity, democratic participation, and social cohesion. The transformation of rural landscapes into extractive energy zones, often without meaningful local involvement, evokes a form of *internal energy colonialism*, where peripheral areas are instrumentalized in the name of national decarbonization targets.

In response, the research identifies seven key policy recommendations: (1) *Inclusive Governance*: strengthen community participation beyond formal consultation, through empowered territorial institutions and deliberative mechanisms grounded in *ecological democracy* [74], as theorized by Eckersley [75]. (2) *Redistribution of Benefits*: redirect profits from renewable projects into public services and territorial welfare, in line with Ostrom's co-governance principles for commons management [76]. (3) *Community Energy Models*: promote decentralized, citizen-managed energy systems, as encouraged by the *Clean Energy for All Europeans* framework [77], to counterbalance corporate concentration and increase local ownership. (4) *Territorialist Approaches*: this study advocates for *bioregional* and *territorialist* models [78,79], rooted in ecological coherence and historical continuity. Rural areas should be seen not as energy sources but as living cultural and ecological systems. *Municipalist* strategies [80] can enhance participation and recognize the agency of communities, ecosystems, and other-than-human life [81,82], challenging extractive development with place-based, integrated governance. (5) *Recognition of Resistance*: acknowledge local mobilizations, such as the 2015 protests in Gesualdo against oil drilling [83], as legitimate acts of political agency rooted in the defense of place-based values and meanings. (6) *Cultural Emancipation*: challenge the liberal-individualist model underpinning green capitalism [84] by fostering local epistemologies and collective imaginaries of transition beyond post-liberal paradigms. (7) *The Commons as Right*: legally and politically recognize the commons not only as a governance mechanism but as a foundational right, exploring new legal ecologies such as *legal personhood for nature* [85].

These recommendations underscore the need to reframe the energy transition not merely as a technological imperative but as a deeply political and cultural process. As Boyer (2022) [86] suggests, the case of Alta Irpinia reflects a dominant "green" infrastructural paradigm that is reformist in form but conservative in logic. To move beyond this, we must envision *revolutionary infrastructures*—those that redistribute power, re-root energy systems in local autonomy, and cultivate ecological subjectivities [86].

In sum, Alta Irpinia reveals the risks of an uncritical, top-down energy transition that reasserts old hierarchies under a new green guise. But it also illuminates alternative paths grounded in participation, justice, and territorial care. Bridging local agency with global ecological responsibility is not only possible—it is necessary if the energy transition is to become a vector of democratic renewal and planetary sustainability. While international frameworks increasingly acknowledge cultural diversity and local knowledge [87], actual capacity-building [88] and empowerment efforts [89] often remain constrained by hierarchical structures that reproduce global asymmetries [90]. To overcome these contradictions, a structural transformation of global governance is required—one that integrates solidarity, accountability, and local self-determination [91,92].

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Author's contribution

Conceptualization, A. Sibilia; methodology, A. Sibilia; validation, A. Sibilia; formal analysis, A. Sibilia; investigation, A. Sibilia; resources, A. Sibilia; data curation, A. Sibilia; writing—original draft preparation, A. Sibilia; writing—review and editing, A. Sibilia; visualization, A. Sibilia; supervision, M. Calloni; project administration, A. Sibilia, M. Calloni. All authors have read and agreed to the published version of the manuscript.

Conflicts of interest

The authors declare no conflicts of interest.

Appendix

The interview tracks:

Group 1: Local Civil Society Stakeholders (Ordinary Citizens, Farmers, Landowners, Representatives of Associations and Unions).

1. In the municipal area where you reside or, more broadly, in the Alta Irpinia region, what do you identify as the primary environmental challenges? Please consider hydrogeological and seismic risks as well as the visual impact of wind turbines.
2. Do you perceive that the population of Alta Irpinia is attentive to environmental concerns, including the management of landscapes and natural resources? If so, to what extent?

3. Are you aware of any initiatives undertaken by local or regional administrations aimed at environmental protection and enhancement, such as the rehabilitation of abandoned agricultural areas or sustainable forest management? Have these measures yielded tangible outcomes?

4. Do you support the energy transition? If so, what are the underlying reasons for your position?

5. How would you assess the wind energy installations present in your municipality or, more broadly, in Alta Irpinia, with regard to both their economic benefits and their territorial impacts?

6. In your view, have wind energy developments altered the local socio-economic fabric, such as by diminishing agricultural activity or influencing the tourism sector? If so, in what ways?

7. Are you aware that municipalities receive royalties from wind energy installations? In your opinion, have these financial resources been effectively utilized to improve local services such as schools, transportation, and infrastructure?

8. Could you recount the key events surrounding the siting and construction of wind energy installations in your area? Who were the main actors involved in these decisions?

9. Do you believe the local population was sufficiently informed about the installation of wind turbines? If so, through what channels? Were the timing and methods of communication, in your opinion, adequate?

10. In your assessment, did the local population have genuine opportunities to participate in decision-making processes concerning the development of wind energy facilities?

11. Are you aware of any plans for new wind turbine installations in your municipality or elsewhere in Alta Irpinia? If so, what type of information has been disseminated regarding these plans, and how has the population responded?

12. What forms of public consultation or citizen participation have been proposed or implemented in your municipality, or in Alta Irpinia more broadly, to address wind energy projects?

13. Are you informed about the existence of a regulatory plan for wind energy installations (PRIE) in your municipality or in neighboring municipalities in Alta Irpinia? Do you consider this tool effective in governing wind energy development?

14. What is your overall perspective on the environmental and social impacts of wind energy installations in your area? What potential consequences do you foresee from further installations, particularly concerning agriculture and the local landscape? In your opinion, should wind energy developments be encouraged universally, restricted to unused lands, or avoided entirely?

15. In the context of Italy's energy supply, what role do you believe renewable energy sources such as hydropower, wind, solar, and biomass can play? What specific contribution do you think wind energy could make to Alta Irpinia?

16. Are you satisfied with the current utilization of Alta Irpinia's territory for wind energy production, considering the region's agricultural and tourism potential? If not, how do you regard the proposal by the Minister of the Environment and Energy Security, Hon. Gilberto Pichetto Fratin, to include nuclear energy in the PNIEC (National Integrated Energy and Climate Plan)? Specifically, it is projected that by 2050, Italy could meet 20% of its electricity demand through nuclear energy (140 TWh), primarily utilizing Small Modular Reactors (SMRs) [93].

17. In your opinion, how does the wind energy sector in Italy compare to that of other countries? Do you identify any significant differences in territorial management approaches?

18. Do you believe that the management of wind energy installations would be better entrusted to public entities (such as municipalities or regions) or private operators? Please provide reasons for your preference.

19. Do you have any recommendations for improving land use for energy purposes, such as fostering local participation, promoting energy self-production, or limiting the scale of wind energy installations?

Group 2: Local Political-Administrative Stakeholders (Local Administrators, Political Representatives).

1. In the municipality where you operate, what do you consider the main environmental challenges, including hydrogeological risks, landscape degradation due to depopulation, and the impact of energy infrastructure?

2. In your opinion, is the local population adequately sensitized to environmental issues, such as landscape preservation and the protection of agricultural resources? What initiatives could increase public awareness in this regard?

3. What measures has the local administration implemented to protect and enhance the environment, such as reclaiming abandoned agricultural areas or managing forests? Have these interventions been effective?

4. What is your overall assessment of the wind energy installations in your municipality, considering their economic benefits, environmental impact, and social consequences?

5. Do you believe wind energy developments have significantly affected local activities, such as agriculture and tourism? If so, what changes have occurred?

6. To what extent have royalties from wind energy installations contributed to the municipal budget? Do you believe these funds are sufficient relative to the land use and the profits generated by operators?

7. What role has the municipal administration played in the decision-making process regarding the siting of wind energy installations? Do you think there was adequate consultation with citizens?

8. In your opinion, are the authorization processes for wind energy installations satisfactory? How could they be improved to ensure better territorial protection and greater transparency?

9. How has the local community reacted to proposals for wind turbine installations? What challenges or support have you observed?

10. Do you think the population was adequately informed about wind turbine installation projects? If so, through which channels and within what timeframe?

11. Have there been concrete forms of public participation in decision-making processes related to wind energy installations? If so, what tools were employed?

12. Are new wind energy installations planned for your municipality or neighboring municipalities in Alta Irpinia? What type of information has been disseminated, and how have citizens responded?

13. What forms of public participation are planned for future decisions regarding wind energy development in your municipality? Do you consider these methods sufficient and effective?

14. In your view, what environmental and social impacts have wind energy facilities had in your municipality? Could further installations pose risks, and if so, in what ways?

15. In terms of electricity generation, what contribution can alternative energy sources (wind, hydropower, solar, biomass, *etc.*) make to Italy's energy supply? What specific role can wind energy play in Alta Irpinia?

16. What is your opinion of the regulatory plans for wind energy installations (PRIE) at the municipal and inter-municipal levels? Does your municipality have a PRIE, and how is it applied?

17. Do you believe the management of wind energy installations should be entrusted to public entities (such as municipalities or regions) or private operators? What are the reasons behind your preference?

18. Do you have any proposals or considerations regarding aspects such as the scale of wind farms, energy self-production, or public initiatives in their management to improve sustainability and foster local consensus?

References

[1]   Demo.Istat.it. 2024. Available: https://demo.istat.it/ (accessed on 16 December 2024).

[2]   National Strategy for "Inner Areas" SNAI. Available: https://www.agenziacoesione.gov.it/strategia-nazionale-aree-interne/ (accessed on 19 February 2025).

[3]   Regione Campania–Assessorato Agricoltura. 2024.Available: https://agricoltura.regione.campania.it/ (accessed on 16 December 2024).

[4]   Jenkins K, McCauley D, Heffron R, Stephan H, Rehner R. Energy justice: A conceptual review. *Energy Res. & Social Sci.* 2016, 11:174–182.

[5]   Sovacool BK, Martiskainen M, Hook A, Baker L. Beyond cost and carbon: The multidimensional co-benefits of low-carbon transitions in Europe. *Ecol. Econ.* 2020, 169(C):106529.

[6]   Devine-Wright P. Rethinking NIMBYism: The role of place attachment and place identity in explaining place-protective action. *J. Commun. & Appl. Social Psychol.* 2009, 19(6):426–441.

[7]   Kluskens M, Vasseur V, Benning R. Energy justice as part of the acceptance of wind energy: An analysis of limburg in the Netherlands. *Energies* 2019, 12(22):4382.

[8]   Temper L, Del Bene D, Martinez-Alier J. Mapping the frontiers and front lines of global environmental justice: The EJAtlas. *J. Political Ecology.* 2015, 22(1):255–278.

[9]   Scheidel A, Temper L, Demaria F, Martinez-Alier J. Ecological distribution conflicts as forces for sustainability: An overview and conceptual framework. *Sustainability Sci.* 2018, 13(3):585–598.

[10] Avila S. Environmental justice and the expanding geography of wind power conflicts. *Sustainability Sci.* 2018, 13(3):599–616.

[11] Osti G. Wind energy exchanges and rural development in Italy. *Sustainability and short-term policies.* Furnham: Ashgate, 2012, pp. 245–259.

[12] Fairhead J, Leach M, Scoones I. Green grabbing: A new appropriation of nature? *J. Peasant Studies.* 2012, 39(2):237–261.

[13] Lombardi P. How a storm of lawsuits paralysed wind mills in northwest Spain. 2025. Available: https://www.reuters.com/business/energy/how-storm-lawsuits-paralysed-wind-mills-northwest-spain-2025-01-14 (accessed on 26 July 2025).

[14] Dechézelles S, Scotti I. Wild wind, social storm: "energy populism" in rural areas? An exploratory analysis of France and Italy. *Rural Sociol.* 2021, 87:784–813.

[15] Daniele F, de Blasio G. Pasquini A. Is local opposition taking the wind out of the energy transition? *ArXiv* 2024, arXiv:2406.03022.

[16] Magnani N, Maretti M, Salvatore R, Scotti I. Ecopreneurs, rural development and alternative socio-technical arrangements for community renewable energy. *J. Rural Studies* 2017, 52:33–41.

[17] Araújo RD, Gorayeb A. Perception of the socio-environmental impacts caused by wind generators in the state of Piauí, Northeast of Brazil. *Sustainability in Debate* 2023, 14(3).

[18] Elaboration based on Demo.Istat.it. 2025. Available: https://demo.istat.it/ (accessed on 21 June 2025).

[19] Copernicus. 2024. Available: https://climate.copernicus.eu/copernicus-2023-hottest-year-record (accessed on 6 November 2024).

[20] European Commission. Commission presents recommendation for 2040 emissions reduction target to set the path to climate neutrality in 2050. 2024. Available: https://ec.europa.eu/commission/presscorner/detail/en/ip_24_588?utm_source=chatgpt.com (accessed on 6 November 2024).

[21] ANEV–Associazione Nazionale Energia del Vento. ANEV_brochure_2024. 2024, pp. 10–12. Available: https://www.anev.org/wp-content/uploads/2024/06/Anev_brochure_2024-1.pdf. (accessed on 6 November 2024).

[22] ECCO–The Italian Climate Change Think Tank. Politiche per un sistema elettrico italiano decarbonizzato nel 2035. 2023. Available: https://eccoclimate.org/wp-content/uploads/2023/05/Politiche-near-zero-power-Italy-2035_9giugno-1.pdf?utm_source=chatgpt.com (accessed on 6 November 2024).

[23] Legambiente Campania. Qual buon vento. 2023, pp. 4,5,9,33,34. Available: https://legambiente.campania.it/wp-content/uploads/2024/02/Dossier-Qual-Buon-Vento-II-Edizione.pdf?utm_source=chatgpt.com (accessed on 6 November 2024).

[24] Gazzetta Ufficiale. Governance del Piano nazionale di ripresa e resilienza e prime misure di rafforzamento delle strutture amministrative e di accelerazione e snellimento delle procedure. 2021. Available: https://www.gazzettaufficiale.it/eli/id/2021/05/31/21G00087/sg (accessed on 6 November 2024).

[25] Gazzetta Ufficiale. Norme in materia ambientale. 2006. Available: https://www.bosettiegatti.eu/info/norme/statali/2006_0152.htm (accessed on 6 November 2024).

[26] Istituto Nazionale di Statistica (ISTAT). Rapporto BES 2023: il benessere equo e sostenibile in Italia. 2024. Available: https://www.istat.it/it/files/2024/04/Bes-2023-Ebook.pdf (accessed on 6 November 2024).

[27] I Quaderni di Symbola. GreenItaly 2024–Un'economia a misura d'uomo contro le crisi. 2024. Available: https://www.iris.sssup.it/bitstream/11382/572412/1/Green%20Italy%202024.pdf (accessed on 6 November 2024).

[28] GSE - Gestione Servizi Energetici. Energia da fonti rinnovabili in Italia - Settori elettrico, termico e trasporti. Rapporto statistico 2017. 2018, 59. Available: https://www.gse.it/documenti_site/Documenti%20GSE/Rapporti%20statistici/GSE%20-%20Rapporto%20Statistico%20FER%202018.pdf (accessed on 6 November 2024).

[29] Forte E. Centrale elettrochimica di Bisaccia, si oppongono i comitati civici di Di Biasi e Solazzo. 2024. Available: https://www.itvonline.news/2024/11/11/centrale-elettrochimica-di-bisaccia-si-oppongono-i-comitati-civici-di-di-biasi-e-solazzo/ (accessed on 14 November 2024).

[30] Forte E. Bisaccia, partiti gli espropri dei terreni per la centrale elettrochimica. Coinvolti quattro comuni. 2024. Available: https://www.itvonline.news/2024/10/25/bisaccia-partiti-gli-espropri-dei-terreni-per-la-centrale-elettrochimica-coinvolti-quattro-comuni/ (accessed on 14 November 2024).

[31] BURC Regione Campania. Available: http://www.burc.regione.campania.it (accessed on 27 December 2024).

[32] Devine-Wright P. Beyond NIMBYism: towards an integrated framework for understanding public perceptions of wind energy. *Wind Energy* 2005, 8(2):125–139.

[33] Wüstenhagen R, Wolsink M, Bürer MJ. Social acceptance of renewable energy innovation. *Energy Policy* 2007, 35(5):2683–2691.

[34] Ruddat M. Public acceptance of wind energy—concepts, empirical drivers and some open questions. *Wind Energy Sci.* 2022, 7(4):1679–1691.

[35] Harvey D. *The limits to capital*. London-New York: Verso Book, 2018.

[36] Benadusi M, Ruggiero L. I paesaggi tardo industriali di fronte alla transizione. In *Tardo industrialismo. Energia, ambiente e nuovi immaginari di sviluppo in Sicilia*, 1st ed. Milano: Meltemi, 2021. pp. 7–29.

[37] Maillé ME, Saint-Charles J. Social cohesion in a community divided by a wind farm project. *Human Ecology Rev*. 2012, 19(2):83–98.

[38] Lipari S. Industrial-scale wind energy in Italian southern Apennine: territorio grabbing, value extraction and democracy. *Scienze del Territorio*. 2020, 8:154–169.

[39] Tortorella M. Decolonizzare la crisi ecologica a Taranto: colonialità, patriarcato ed ecologia-mondo. 2021. Available: https://www.intersezionale.com/2021/05/05/decolonizzare-la-crisi-ecologica-in-tarantocolonialismo-patriarcato-ecologia-mondoprima-parte (accessed on 16 February 2025).

[40] Lipari S, Turco A. È possibile salvare le rinnovabili dal capitalismo? 2021. Available: https://jacobinitalia.it/e-possibile-salvare-le-rinnovabili-dal-capitalismo/ (accessed on 16 February 2025).

[41] Harvey D. *A Brief History of Neoliberalism*. Oxford: Oxford University Press, 2007.

[42] Ciervo M, Cerreti C. Landscape grabbing. A new concept for geographical analysis? *AGEI— Geotema, Supplemento*. 2020, pp. 123–130.

[43] Halvorsen S, Fernandes BM, Torres FV. Mobilizing Territory: Socioterritorial movements in comparative perspective. *Annals of the Am. Assoc. Geographers*. 2019, 109(5):1454–1470.

[44] Jurkevics A. Land grabbing and the perplexities of Territorial Sovereignty. *Political Theory* 2022, 50(1):32–58.

[45] Armiero M, Gravagno F, Pappalardo G, Ferrara AD. The nature of Mafia: An environmental history of the Simeto River Basin, Sicily. *Environ. History* 2019, 26(4):579–608.

[46] Wacquant L. Territorial stigmatization in the age of advanced marginality. *Thesis Eleven* 2007, 91:66–77.

[47] Fortunato M. Eolico, 14 attentati agli impianti dell'Alta Irpinia. Indagini su criminalità pugliese. E accuse alla legge che esautora i sindaci. 2016. Available: https://www.ilfattoquotidiano.it/2016/03/30/eolico-14-attentati-agli-impianti-dellalta-irpinia-indagini-su-criminalita-pugliese-e-accuse-alla-legge-che-esautora-i-sindaci/2590645/ (accessed on 13 November 2024).

[48] Della Pia T. PRC sulle energie rinnovabili: "La provincia di Avellino è invasa dall'eolico selvaggio". 2024. Available: https://www.avellinotoday.it/green/prc-energie-rinnovabili-avellino-eolico-selvaggio.html (accessed on 13 November 2024).

[49] Dobson A. *Green Political Thought*, 4th ed. London: Routledge, 2007.

[50] Warren CR, Lumsden C, O'Dowd S, Birnie RV. "Green On Green": public perceptions of wind power in Scotland and Ireland. *J. Environ. Plann. Manage.* 2005, 48:853–875.

[51] Orlandini G, Valesini D. Estrattivismo planetario e regime estrattivo italiano. Note dal margine meridionale. *Ecologie politiche del presente* ; Allocca D, Capone N, Del Giudice G, Ferrante N, Iengo I, Orlandini G, Sciarelli R, Valisena D, Eds. Napoli: Tamu Edizioni, 2021. pp. 57–76.

[52] Aletes67. La campana della guerra eolica in Alta Irpinia suona anche per te. 2016. Available: https://reteresistenzacrinali.wordpress.com/2016/03/04/la-campana-della-guerra-eolica-in-alta-irpinia-suona-anche-per-te/ (accessed on 13 November 2024).

[53] Barbaro E. Irpinia, minacce e attacchi all'eolico con kalashnikov e camion incendiati. Fava: la ma fia è arrivata anche qui. 2016. Available: https://salerno.corriere.it/notizie/economia/16_febbraio_08/irpinia-minacce-attacchi-all-eolico-kalashnikov-camion-incendiati-fava-arrivata-mafia-anche-qui-a7dcdc16-ce55-11e5-84b6-e3afc18b58d6.shtml (accessed on 13 November 2024).

[54] ORTI Osservatorio relazioni territori-imprese. 2018. Available: https://www.osservatoriorti.com/evidenza/un-vento-di-contestazioni-contro-leolico-in-irpinia-campania/ (accessed on 13 November 2024).

[55] Barbaro E. L'eolico, l'Irpinia, gli indifferenti e il pizzo. 2016. Available: https://www.terredifrontiera.info/eolico-irpinia-indifferenti/ (accessed on 13 November 2024).

[56] Commissione Nazionale Italiana per l'Unesco. 2024. Available: https://www.unesco.it/it/news/la-via-appia-e-stata-iscritta-nella-lista-del-patrimonio-mondiale-dellunesco-per-litalia-e-il-60-riconoscimento/ (accessed on 14 November 2024).

[57] De Marco F. Il grano, il vento e il parco eolico. 2024. Available: https://ponir.mit.gov.it/contest-2024/foto-2024/296-il-grano-il-vento-e-il-parco-eolico (accessed on 13 November 2024).

[58] Forte E. Parco eolico a Conza della Campania, bloccati espropri a 7 proprietari di terreni. 2023. Available: https://www.itvonline.news/2023/06/12/parco-eolico-a-conza-della-campania-bloccati-espropri-a-7-proprietari-di-terreni/ (accessed on 26 June 2024).

[59] Forte E. Via al repowering del più grande parco eolico altirpino tra Bisaccia, Andretta e Vallata. Espropri per 570 particelle. 2025. Available: https://www.itvonline.news/2025/06/26/via-al-repowering-del-piu-grande-parco-eolico-altirpino-tra-bisaccia-andretta-e-vallata-espropri-per-570-particelle/ (accessed on 26 June 2024).

[60] Jerace R. L'eolico della discordia, Controvento: «Progetto che devasta senza dare nulla in cambio». 2023. Available: https://www.quotidianodelsud.it/calabria/cronache/territorio-e-ambiente/2023/12/22/leolico-della-discordia-controvento-progetto-che-devasta-senza-dare-nulla-in-cambio (accessed on 26 June 2024).

[61] ISPRA—Istituto Superiore per la Protezione e la Ricerca Ambientale. Gli impianti eolici nella percezione di alcune comunità del Sub-Appennino Dauno. Quaderni. 2015. Available: https://www.isprambiente.gov.it/it/pubblicazioni/quaderni/ambiente-e-societa/gli-impianti-eolici-nella-percezione-di-alcune-comunita-del-sub-appennino-dauno.-1 (accessed on 13 November 2024).

[62] Maggi M. TecnoRischio & Ambiente. Energia eolica e opinione pubblica. Biblioteca Lupo della steppa. 2010. Available: https://www.steppa.net/html/tecnorischio/tecnorischio5.htm (accessed on 13 November 2024).

[63] Cardano M. *Tecniche di ricerca qualitativa. Percorsi di ricerca nelle scienze sociali*. Rome: Carocci, 2003. pp. 94,73–106.

[64] Ruslin R, Mashuri S, Sarib M, Alhabsyi F, Syam H. Semi-structured interview: A methodological reflection on the development of a qualitative research instrument in educational studies. *IOSR-JRME* 2022, 12(1):22–29.

[65] Akhter S. Key Informants' Interviews. *Principles of Social Research Methodology*; Islam MR, Khan NA, Baikady R, Eds. Berlin: Springer, 2022. pp. 389–403.

[66] Turunen AW, Tiittanen P, Yli-Tuomi T, Taimisto P, Lanki T. Symptoms intuitively associated with wind turbine infrasound. *Environ. Res.* 2021, 192:110360.

[67] The Guardian. French couple who said windfarm affected health win legal fight. 2021. Available: https://www.theguardian.com/world/2021/nov/08/french-couple-wins-legal-fight-wind-turbine-syndrome-windfarm-health (accessed on 16 February 2025).

[68] Poulsen AH, Raaschou-Nielsen O, Pena A, Hahmann AN, Nordsborg RB, *et al.* Short-term nighttime wind turbine noise and cardiovascular events: A nationwide case-crossover study from Denmark. *Environ. Int.* 2018, 114:160–166.

[69] Zou EY. Wind turbine syndrome: The impact of wind farms on suicide. 2017. Available: https://static1.squarespace.com/static/56034c20e4b047f1e0c1bfca/t/5f612bb98bdfff6199b3a97c/1600203713573/turbine_zou202009.pdf (accessed on 16 February 2025).

[70] Voicescu SA, Michaud DS, Feder K, Marro L, Than J, *et al.* Estimating annoyance to calculated wind turbine shadow flicker is improved when variables associated with wind turbine noise exposure are considered. *J. Acoust. Soc. Am.* 2016, 139:1480–1492.

[71] Haac R, Darlow R, Kaliski K, Rand J, Hoen B. In the shadow of wind energy: Predicting community exposure and annoyance to wind turbine shadow flicker in the United States. *Energy Res. & Social Sci.* 2022, 87:102471.

[72] Andersen C, Hener T. Wind turbines, shadow flicker, and real estate values. *Environ. Resour. Econ.* 2025.

[73] Wahlund M, Palm J. The role of energy democracy and energy citizenship for participatory energy transitions: A comprehensive review. *Energy Res. & Social Sci.* 2022, 87:102482.

[74] Eckersley R. Ecological democracy and the rise and decline of liberal democracy: looking back, looking forward. *Environ. Politics* 2020, 29(2):214–234.

[75] Floridia A. *La democrazia deliberativa. Teorie, processi e sistemi*. Roma: Carocci-Laterza, 2013.

[76] Ostrom E. *Governing the Commons: The Evolution of Institutions for Collective Action (Political Economy of Institutions and Decisions)*. Cambridge: Cambridge University Press, 1990.

[77] European Union Agency for the Cooperation of Energy Regulators (ACER). 2020. Available: https://www.acer.europa.eu/electricity/about-electricity/clean-energy-package (accessed on 28 March 2025).

[78] Marzocca O. Democrazia e territorio nell'epoca del liberalismo post-democratico: alla ricerca di un framework di riferimento. *PRISMA Economia - Società - Lavoro* 2013, 2012(2):14–27.

[79] Fotopoulos T. Direct Democracy and De-growth. *Int. J. Inclusive Democracy* 2010, 6(4).

[80] Myung-Ae C. Multiple environmental subjects: Governmentalities of ecotourism development in Jeungdo, South Korea. *Geoforum* 2020, 110:77–86.

[81] Gorz A. After Neoliberalism: From Eco-Marxism to Ecological Civilization, Part 2. *Capitalism Nat. Socialism* 2021, 32(3):43–60.

[82] Moran EF. *Human Adaptability. An Introduction to Ecological Anthropology*, 4th ed. New York: Routledge, 2022.

[83] Mian MG. No-Triv: in Irpinia i giovani in lotta contro le trivelle. Una terra rinata dopo il terremoto del 1980. I laureati sono tornati per puntare sullo sviluppo sostenibile ora messo in pericolo dalle ricerche di petrolio. 2015. Available: https://www.corriere.it/ambiente/15_gennaio_29/no-triv-irpinia-trivelle-petrolio-6fa23614-a7bb-11e4-b182-cec9e96dbdaf.shtml (accessed on 20 February 2025).

[84] Robbins P. *Political Ecology: A Critical Introduction*, 3rd Edition. Hoboken: Wiley-Blackwell, 2019.

[85] Bagni S. Diritti della natura nei nuovi costituzionalismi del Global South: riflessi sulla teoria dei formanti: Rights of Nature in the new constitutionalisms of the Global South: reflections on formant theory. *DPCE Online* 2023, 58(SP2).

[86] Boyer D. Infrastructural futures in the ecological emergency: Gray, green, and revolutionary. *Hist. Social Res.* 2022, 47(4):48–65.

[87] Baroncini E, Eds. *Tutela e valorizzazione del patrimonio culturale mondiale nel diritto internazionale*. Bologna: Bononia University Press, 2021.

[88] Baglieri M. *Martha Nussbaum: La fioritura delle capacità per il XXI secolo*. Milano: Franco Angeli Edizioni, 2022.

[89] Murdock EG. A history of environmental justice. Foundations, narratives, and perspectives. *Environ. Justice: Key Issues* 2020, 6–17.

[90] Marcenò S. Better safe than sorry. Ambiente sicuro e biopolitica delle popolazioni. In *Governare l'ambiente? La crisi ecologica tra saperi, poteri e conflitti*; Marzocca O, Eds. Milano: Mimesis, 2010. pp. 101–113.

[91] Green and White Annual Report 2021. Il tempo della decrescita felice. Available: https://www.decrescitafelice.it/wp-content/uploads/2021/11/Il-tempo-della-decrescita-felice_NOV2021.pdf (accessed on 21 February 2025).

[92] Ramundo S. Globalizzazione e sviluppo sostenibile: opportunità economiche e rischi ambientali. *Aequitas Magazine. Rivista di Cultura e Diritto* 2024.

[93] Capone L. Pichetto inserisce l'energia nucleare nel Pniec definitivo: "È la via obbligata", dice il ministro. 2024. Available: https://www.ilfoglio.it/politica/2024/06/12/news/pichetto-inserisce-l-energia-nucleare-nel-pniec-definitivo-e-la-via-obbligata-dice-il-ministro-6642426/ (accessed on 21 November 2024).