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Supplementary file

Energy transition projects as a factor in disruption of the economic and social life of rural communities. Limited territorial intelligence as a facilitator. A case study from Northern Greece

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This supplementary file contains additional details about the real-world survey, key performance indicators (KPIs), interview guide, coding process, and ethical considerations supporting the main article.

Table S1: Fieldwork Log and Participants

Fieldwork took place in two stages: exploratory visits in February–May 2024 and focused data collection during summer 2024 (four site visits). The empirical material includes nine semi-structured interviews and two focus groups (each with five participants), totaling 19 participants. Participants were selected using purposive and snowball sampling to represent key stakeholder groups. Below is a list of anonymised participant codes and roles.

Participant Code	Role / Description
INT01	Livestock farmer, semi-mountainous community
INT02	Livestock farmer, semi-mountainous community
INT03	Dairy owner
INT04	Retired resident (landowner)
INT05	Community representative
INT06	Farmer (lowland community)
INT07	Farmer (lowland community)
INT08	Young farmer, lowland community
INT09	Young farmer, semi-mountainous community
FG1_P1–P5	Focus Group 1 (semi-mountainous community) participants
FG2_P1–P5	Focus Group 2 (lowland community) participants

Table S2: Key Performance Indicators (KPIs) / Metrics

The following table summarises measurable indicators identified through the fieldwork. Values are based on participants' reports and field notes and are therefore indicative.

KPI / Metric	Semi-Mountainous Community	Lowland Community	Source / Note
Population (village)	≈110 residents	≈393 residents	Field observation / manuscript
PV area installed	≈650 ha	Scattered small parks	Participant reports / manuscript

Share of public pastures covered by PV	≈65% (of 1000 ha total)	—	Participant reports
Number of herds (before → after)	15 → 3	n.a.	Participant reports
Livestock counts (before → after)	~5000 sheep/goats & 1000 cattle → ~1000 sheep/goats & 100 cattle	n.a.	Participant reports
Farmer land loss example	n.a.	Lost 10 ha of 50 ha cultivated	Farmer interview
Jobs created locally	≈12 (installation & guarding)	Small number / temporary	Participant reports
Compensation levels	"Generous compensation"	≈€300/ha (agricultural rent) vs ≈€2000/ha (PV rent)	Participant reports

Document S1: Interview and Focus-Group Guide

The following questions guided the semi-structured interviews and focus groups. Questions were open-ended and adapted depending on the stakeholder profile.

1. How has land use changed in your community in recent years?
2. What is your perception of the photovoltaic (PV) investments in your area?
3. How have these investments affected agricultural and livestock activities?
4. Have you experienced any changes in income, employment, or land availability?
5. What is your opinion on the compensation or benefits provided to local residents?
6. How do you see the future of agriculture and livestock in your community?
7. What actions or support do you consider necessary from local or national authorities?

Document S2: Coding and Analysis Notes

Data were analyzed through two rounds of manual coding performed independently by three researchers. In the first round, open coding identified recurring themes (e.g., land loss, social cohesion, economic compensation, future expectations). In the second round, axial coding connected these themes to broader analytical categories such as socio-economic resilience and territorial intelligence. Triangulation of notes from the three researchers was conducted to increase reliability. Given the qualitative and exploratory nature of the study, formal inter-coder reliability metrics were not applied.

Document S3: Ethics and Data Availability

All procedures involving human participants were conducted in accordance with the ethical standards of the International Hellenic University's Research Ethics and Deontology Committee, which formally approved the study protocol. Each participant read and signed the official Informed Consent Form prior to participation.

The consent form explained the purpose of the research ("Energy transition projects as a factor in disruption of the economic and social life of rural communities. Limited territorial intelligence as a facilitator. A case study from Northern Greece") and clarified that participation was voluntary, that participants could withdraw at any time without consequence, and that there were no foreseeable risks or compensation.

Confidentiality and data protection measures were fully aligned with Regulation (EU) 2016/679 (GDPR). Personally identifiable data were stored separately from research materials under the responsibility of the principal investigator. Data will be retained securely for three years after study completion and may be used for secondary analysis in other duly approved research projects, as permitted by Article 5(b) of the GDPR.

Interviews were not audio-recorded unless participants gave explicit permission. In most cases, three researchers independently recorded detailed notes, which were later triangulated. Anonymized field notes are stored securely by the authors and can be made available upon reasonable request for academic purposes.

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