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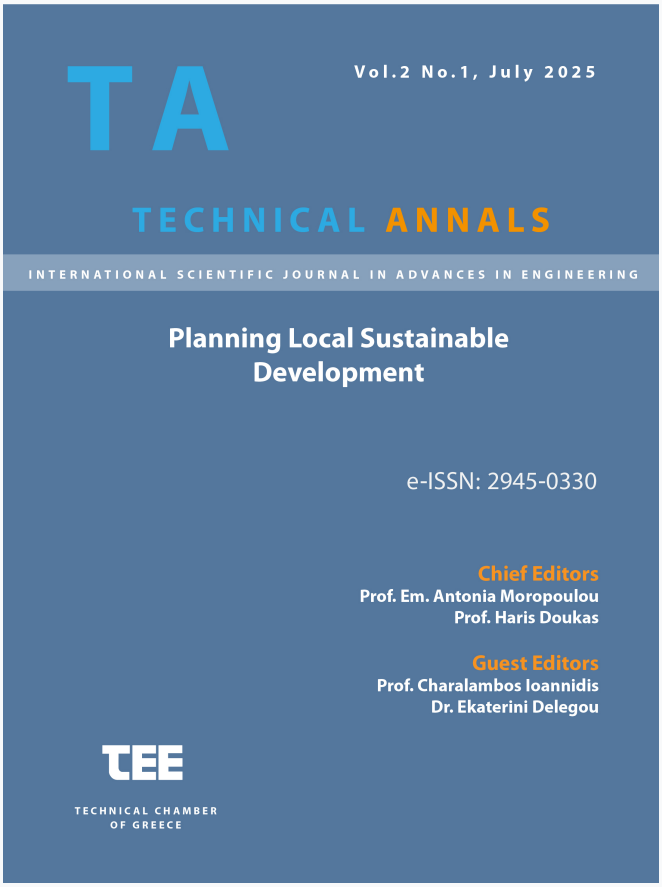

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Sustainable Development in the Mountainous Grammos Region through Collective, Participatory, and Experiential Practices: Insights from the Two Autumn Schools of the Department of History and Archaeology, University of Patras

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Abstract. Mountainous regions affected by violent historical ruptures constitute complex socio-ecological systems in which natural environments, collective memory, and cultural identity interact in deeply entangled ways. The Grammos mountain area in Northwestern Greece represents a paradigmatic case, combining exceptional ecological value with an intense traumatic historical legacy stemming from the Greek Civil War (1946-1949). This article argues that sustainable development in such contexts is not only economic or environmental; it is a participatory and memory-sensitive process grounded in the interaction between communities, ecosystems, and historical experience. Drawing on the educational and commemorative practices developed through the Autumn Schools on Memory and History hosted at the National Reconciliation Park of Grammos, the study explores how public history, trauma awareness, and community participation operate as critical mechanisms for transforming traumatic landscapes into spaces of social dialogue, ecological responsibility, and long-term sustainable development.

Keywords: Sustainable Development, Traumatic Memory, Public History, Mountainous Regions, Grammos, Experiential Relationship

1 Introduction

Mountainous territories throughout Southern and Southeastern Europe are commonly characterized by structural marginality, demographic contraction, limited access to infrastructure, and fragile ecosystems [1]. These structural conditions are often intensified in regions marked by experiences of political violence and civil conflict, where unresolved historical trauma intersects with environmental vulnerability and socio-economic stagnation. Grammos, a mountainous border region between Greece and Albania, exemplifies this multidimensional condition. Beyond its geographical remoteness and ecological sensitivity, Grammos bears the heavy symbolic and emotional weight of the Greek Civil War, which culminated in the area during the years 1948-

1949 [2, 3]. The mountain landscape functions both as an ecosystem and as a historical archive shaped by conflict, memory, and contested narratives.

Recent approaches to sustainable development emphasize the integration of environmental protection, social cohesion, and cultural continuity [4, 5]. Yet in post-conflict landscapes such as Grammos, development cannot be detached from the politics of memory, the management of trauma, and the symbolic reconstruction of space. Development initiatives that ignore these dimensions risk reproducing historical silences, reinforcing social mistrust, and undermining local legitimacy [6]. This article advances the argument that sustainability in such contexts must be conceptualized as a sociocultural process rooted in collective participation and in what is here termed an experiential relationship, a dynamic interdependence between biological ecosystems, embodied human experience, collective memory, and cultural representation. Rather than treating memory as an obstacle to progress, the article conceptualizes traumatic heritage as a constitutive dimension of territorial identity and as a potential resource for socially inclusive and ecologically responsible development.

This article aims to conceptualize sustainable development in post-conflict mountainous regions through the notion of an experiential relationship between landscape, memory, and community practices. Focusing on the Grammos region, the study explores how participatory, educational, and public history initiatives can contribute to socially inclusive and ecologically grounded forms of development. In contrast to dominant sustainability frameworks that emphasize spatial planning, resource management, or tourism development, this approach foregrounds the role of embodied experience, collective memory, and symbolic engagement with place. By integrating insights from environmental humanities, memory studies, and participatory development, the article proposes the concept of experiential sustainability as a complementary perspective to existing models. Its contribution lies in demonstrating that sustainable development in historically burdened and peripheral regions depends not only on strategic planning and economic intervention, but also on processes of meaning-making, narrative inclusion, and the ethical engagement with landscape.

2 Grammos Traumatic Memory and Social Production of Space as a Historical Palimpsest

The Grammos mountain range constitutes one of the most ecologically significant regions in Greece, hosting diverse habitats, endemic flora, and extensive forest ecosystems protected under European environmental frameworks [7]. At the same time, it operates as a dense historical palimpsest, inscribed with layers of violence, displacement, and ideological confrontation. During the final phase of the Greek Civil War, the area became the last stronghold of the Democratic Army of Greece and the stage for massive military operations, resulting in thousands of deaths, forced migrations, and the long-term stigmatization of local communities [2, 8]. Villages were destroyed, populations were displaced, and entire social networks were fractured along political lines. The material landscape still bears the traces of this conflict in the form of abandoned settlements, military trenches, ruined infrastructure, and commemorative monuments.

These material residues function not merely as passive reminders of past events, but as active participants in the contemporary production of meaning. As Pierre Nora famously argued, *lieux de mémoire* emerge precisely when living memory becomes problematic, institutionalized, and politically contested [9]. In this sense, Grammos constitutes a hybrid space where ecological value and traumatic heritage co-exist. Forests grow over former battlefields, hiking paths cross mass graves, and conservation zones overlap with sites of historical violence. This spatial superimposition complicates conventional distinctions between natural and cultural heritage and challenges development strategies that attempt to isolate environmental protection from social memory.

Traumatic memory differs from conventional historical knowledge in that it remains fragmented, affectively charged, and resistant to closure. Rather than following linear temporality, it re-emerges in the present through embodied and intergenerational processes [10, 11]. In the Greek case, the memory of the Civil War remained politically suppressed for decades. Following the end of the conflict, official narratives framed the war in strictly ideological terms, marginalizing the experiences of defeated populations and silencing alternative interpretations [8]. As a result, traumatic memory persisted largely in private spheres, transmitted within families and local communities, often in fragmented or coded forms. Paul Ricoeur conceptualizes this condition as *mémoire blessée* (wounded memory), a state in which societies remain unable to fully integrate violent pasts into shared historical understanding [12]. Such unresolved memory does not disappear; instead, it re-emerges periodically in public debates, commemorations, and political conflicts.

Space plays a decisive role in this process. Landscapes function as mnemonic devices that anchor memory in material form [13]. In Grammos, the mountain itself becomes a carrier of trauma. Its topography, paths, and ruins evoke stories of loss, betrayal, heroism, and suffering. Memory is thus spatialized, and space becomes emotionally saturated. This spatialization has direct implications for development. Infrastructure projects, tourism initiatives, and conservation policies inevitably intervene in landscapes that are already symbolically charged. Without careful negotiation, such interventions risk re-opening wounds or privileging certain narratives over others.

3 Education, Public History, and Participatory Memory Practices in Grammos: Toward a Theory of Experiential Relationship

Against this background, the educational initiatives organized at the National Reconciliation Park of Grammos of the Hellenic Parliament Foundation[1] acquire particular significance. The Autumn Schools on “Memory and History in the 20th and 21st Century” (2024) and “Trauma and Historical Memory” (2025), organized by the Department of History and Archaeology of the University of Patras, represent an innovative model of place-based academic engagement (see Fig. 1). These programs integrate historical theory, oral history, digital humanities, psychiatry, cultural studies, and public

[1]https://www.grammos-pes.gr/, last accessed 2026/27/01

history within the very landscape shaped by the events under discussion. Students actively participate in a collective interpretive process involving scholars, local inhabitants, and practitioners. The Autumn Schools include walking through battlefields, oral testimonies, and guided tours. These practices illustrate how knowledge emerges through embodied engagement with historically charged landscapes, supporting the concept of an experiential relationship between memory, environment, and social learning.

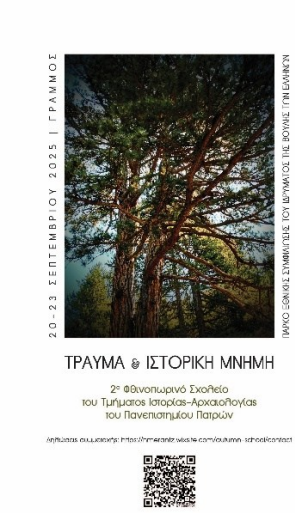

Fig. 1. The poster of the 2nd Autumn School (2025)

Such initiatives align with contemporary theories of experiential and place-based learning, which stress that knowledge emerges through embodied engagement with specific environments [14, 15]. Walking through former battlefields, listening to local narratives, and participating in guided tours of memory sites create a cognitive and emotional depth unattainable through classroom instruction alone. From the perspective of sustainable development, these educational practices perform several interconnected functions. They generate alternative educational activity in a peripheral region through academic knowledge and cultural events; they strengthen the symbolic visibility of Grammos beyond its historical stigmatization; and they foster networks between universities, cultural institutions, and local communities. More importantly, they contribute to the gradual transformation of traumatic memory from a source of silent division into a platform for dialogue and reflection. Public history practices, when designed inclusively, allow multiple narratives to coexist without collapsing into relativism or ideological polarization [12, 16]. This interaction highlights how memory is not only narrated but spatially and bodily experienced, reinforcing the conceptualization of landscape as an active component of social and ecological sustainability.

The concept of experiential relationship captures the interaction between ecological systems and human memory processes. Drawing on environmental humanities and

memory studies [13, 17, 18], it emphasizes that landscapes are not passive backdrops but active agents in shaping historical consciousness and social identity. It responds to a growing recognition across environmental humanities, anthropology, and memory studies that landscapes are not passive backdrops of social action but active agents in the constitution of historical consciousness and social identity. The term experiential intentionally combines the biological (*bios*) and the experiential-symbolic (*mneme*), indicating that memory is not merely stored in archives or minds, but is materially inscribed in landscapes, bodily practices, and ecological processes. Trauma, remembrance, and ecological regeneration unfold simultaneously and interactively, shaping how communities inhabit space and imagine their future. In Grammos, memory is not only narrated but physically embedded in forests, rivers, altitudes, and ruins. Human bodies move through spaces shaped by violence, while ecosystems regenerate over sites of destruction. This continuous interaction produces a form of ecological memory that exceeds both individual psychology and written history. Sustainable development, in this sense, cannot be understood as external intervention upon a neutral environment. It unfolds within a living matrix of biological regeneration and symbolic re-signification.

Conventional models of sustainable development tend to conceptualize nature as a resource base and society as a managerial actor. Even participatory approaches often remain grounded in instrumental rationality, emphasizing governance mechanisms, stakeholder inclusion, and institutional capacity-building [19, 20]. While these dimensions are undoubtedly important, they remain insufficient for territories such as Grammos, where the environment itself is saturated with historical suffering and symbolic density.

4 Memory as Embodied and Spatial Practice

Memory studies have long moved beyond purely cognitive models that treat remembrance as an internal mental process. Halbwachs demonstrated that memory is fundamentally social, structured by collective frameworks that determine what is remembered and how [21]. Assmann further distinguished between communicative and cultural memory, emphasizing the role of institutions, rituals, monuments, and landscapes in stabilizing collective remembrance over time. In contexts of trauma, memory becomes deeply embodied [13]. Neuroscientific and psychological research has shown that trauma is stored not only narratively but also somatically, through sensory triggers, spatial disorientation, and bodily reactions [11]. Caruth argues that trauma disrupts linear temporality, producing repetitive returns of the past into the present [10]. This is reflected in Grammos, where the landscape itself operates as a carrier of unresolved memory, linking historical events to present-day social perception.

These insights converge on the notion that landscapes can function as mnemonic devices activating bodily memory. Walking through former battlefields, encountering ruins, or traversing sites of mass death evokes affective responses that precede linguistic articulation. Space thus becomes a medium through which memory is continuously re-enacted. In Grammos, this phenomenon is particularly pronounced. The topography

of the mountain range, with its steep slopes, dense forests, and remote valleys, shaped both military strategies and the experiences of combatants and civilians during the Civil War. Contemporary visitors often report unease or solemnity independent of prior historical knowledge, suggesting that spatial configurations themselves participate in transmitting affective memory.

Ecological systems are not unaffected by human violence. Warfare alters soil composition, vegetation patterns, hydrology, and animal populations, leaving long-term ecological scars [22]. In Grammos, forests have gradually reclaimed military installations, trenches have collapsed into the terrain, and wildlife has returned to areas once saturated with human presence. This ecological recovery introduces a paradoxical coexistence of natural renewal and unresolved historical suffering. From a biomatic perspective, ecological regeneration does not erase trauma but coexists with it, creating layered landscapes where life and memory interpenetrate. This coexistence challenges simplistic narratives of "return to normality" and raises ethical questions about how development should engage with such environments. Political ecology emphasizes that environmental management is always embedded in power relations and historical trajectories [23], meaning that decisions about conservation, tourism, or memorialization inevitably privilege certain interpretations of the past while marginalizing others.

The dominant paradigms of sustainable development, emerging from late twentieth-century global policy debates such as the Brundtland Report [4], sought to reconcile economic growth with environmental protection and intergenerational equity. However, these frameworks rarely addressed collective trauma, memory conflicts, and symbolic injustice. Post-conflict societies confront obstacles including social mistrust, fragmented identities, politicized narratives, and moral asymmetries between victims and perpetrators [24, 25]. In these contexts, development is inseparable from transitional justice, reconciliation processes, and cultural recognition, where memory becomes a political resource mobilized to legitimize territorial claims, institutional authority, or national identity.

In Grammos, the memory of the Civil War remained polarized for decades, with competing ideological camps constructing incompatible narratives of heroism, betrayal, and victimhood. These divisions were spatially inscribed through monuments, restricted zones, and settlement patterns. Only recently has a more pluralistic approach emerged, emphasizing reconciliation and dialogue rather than triumphalist commemoration. The establishment of the National Reconciliation Park symbolizes this shift toward an institutionalized politics of memory aimed at inclusion rather than exclusion. Public history has increasingly been recognized as a form of cultural infrastructure capable of generating economic, educational, and social value [26]. Museums, heritage trails, memorial parks, and educational programs attract visitors, stimulate local economies, and foster civic engagement, yet they are never neutral. They structure how communities interpret the past and position themselves within broader national and transnational narratives. In Grammos, the Autumn Schools represent a sophisticated form of public history practice, integrating academic rigor with participatory methodologies. Oral testimonies, guided fieldwork, digital archives, and interdisciplinary seminars allow multiple perspectives to coexist within a shared interpretive framework. Such practices contribute to what Ricoeur describes as narrative hospitality; the ethical

willingness to host the stories of others without demanding their assimilation into a single master narrative [12]. From a developmental perspective, this openness enhances social capital, strengthens institutional trust, and reduces the likelihood of symbolic conflict over land use and heritage management.

Participatory development theory emphasizes local knowledge, community agency, and bottom-up decision-making [19]. In post-conflict regions, participation acquires an ethical dimension, epistemic justice. Fricker introduced the concept of epistemic injustice to describe situations in which individuals or groups are systematically discredited as knowers. Survivors of political violence often experience such injustice when their testimonies are dismissed or instrumentalized [27]. In Grammos, families associated with the defeated side of the Civil War endured decades of political marginalization. Their memories were excluded from official narratives, producing symbolic dispossession. Participatory memory practices challenge this legacy by recognizing local inhabitants as legitimate historical subjects rather than passive carriers of trauma. Involvement of community members as narrators, guides, and collaborators in educational programs transforms memory from a stigmatized burden into a source of cultural authority. This process reshapes the relationship between academic institutions and peripheral regions, transforming universities into partners in co-creating historically and socially situated knowledge. Epistemic inclusion is not merely moral; it is also a practical condition for sustainable development, as projects ignoring local narratives often face resistance or symbolic delegitimization.

Trauma rarely remains confined to those who directly experienced violence. It is transmitted across generations through family stories, silences, behavioral patterns, and emotional climates [28]. In mountainous regions with limited mobility and strong kinship networks, such as Grammos, intergenerational transmission is intense. Children grow up surrounded by places associated with death, betrayal, or heroism, absorbing narratives that become part of their sense of belonging. These inherited memories influence attitudes toward land ownership, political participation, and relations with neighboring communities. Development initiatives that fail to account for these temporal layers risk misinterpreting local reactions as irrational or conservative when they are grounded in historical experience. The Autumn Schools address this dimension by creating intergenerational encounters in which students engage with elderly inhabitants, listening to testimonies that bridge private suffering and public history. Such encounters contextualize trauma, enabling younger generations to situate inherited memories within broader analytical frameworks. This process contributes to the gradual reconfiguration of territorial identity, shifting from rigid ideological affiliation toward a more reflexive and pluralistic understanding of the past.

5 Post-Conflict Landscapes

Political ecology provides tools for analyzing how environmental governance intersects with historical power relations [23]. In memory-saturated landscapes, decisions regarding conservation, tourism development, or infrastructure construction inevitably intervene in symbolic orders. The designation of Grammos as a protected ecological

zone and a national memory site reflects competing priorities such as biodiversity conservation, heritage management, national reconciliation, and regional development. These priorities are not always compatible; ecotourism initiatives may commodify suffering, while excessive memorialization may restrict economic activity. The experiential framework renders these tensions visible and analytically tractable, suggesting that sustainable development should be understood as a continuous negotiation between ecological resilience and mnemonic responsibility, economic viability and ethical remembrance.

Sustainable development in Grammos can thus be conceptualized as a multi-layered process encompassing ecological regeneration, memory work, educational innovation, and participatory governance. Experiential sustainability differs from conventional sustainability in three ways. First, it recognizes trauma as a structural condition rather than a temporary obstacle. The past is not something to be "overcome", but to be ethically integrated. Second, it treats landscapes as active participants in social life, not merely as resources or backdrops. Third, it situates participation not only in administrative procedures, but in epistemic and symbolic domains, acknowledging local communities as co-authors of historical meaning. This model does not promise harmony or closure. It accepts conflict, ambiguity, and emotional intensity as inherent to post-conflict environments. Sustainability becomes the capacity to inhabit these tensions without resorting to erasure or domination. In this sense, the Grammos landscape can be understood as a living archive, where natural regeneration and historical memory coexist and interact.

Grammos demonstrates that development initiatives must be context-sensitive, integrating trauma, memory, and ecological processes as mutually constitutive. The Autumn Schools exemplify how academic, local, and institutional actors can co-create spaces where memory, pedagogy, and environment converge. By fostering narrative hospitality, epistemic justice, and ecological mindfulness, such initiatives produce socially sustainable outcomes while cultivating ethical responsibility toward past suffering. The experiential approach thus expands the conceptual horizon of sustainability, insisting that historical consciousness and environmental stewardship are inseparable in regions scarred by conflict.

The implications extend beyond Grammos. Mountainous post-conflict landscapes worldwide can benefit from approaches that treat memory as both embodied and spatial, trauma as structural and generational, and participation as ethical and epistemic. By integrating these principles into development, conservation, and heritage management policies, it becomes possible to transform sites of historical violence into spaces of reflective engagement, communal learning, and ecological resilience. This approach reconceives sustainability as an ongoing, negotiated, and morally grounded practice in which the past and the present coexist, shaping the trajectories of post-conflict societies without erasure, romanticization, or domination.

6 Grammos as a Living Memory Landscape and Educational Infrastructure

The Grammos mountain region constitutes not only a geographically remote and ecologically valuable area, but also a complex socio-historical terrain in which environmental processes, political conflict, and cultural memory are inextricably intertwined. As such, it offers a particularly fertile case for examining how sustainable development can emerge through participatory, memory-sensitive practices grounded in a biomatic relationship between humans and their environment. The establishment of the National Reconciliation Park and the organization of the Autumn Schools on memory and trauma provide an empirical basis for evaluating the transformative potential of public history and education as developmental instruments in post-conflict mountainous territories.

The creation of the National Reconciliation Park in Grammos represents a significant institutional intervention into the symbolic geography of the region. Rather than functioning solely as a memorial to the victims of the Greek Civil War, the Park was conceived as a multifunctional space combining ecological conservation, historical reflection, and educational activity. This multifaceted mandate reflects a broader shift in European heritage policy, which increasingly promotes the integration of cultural and natural heritage under the rubric of "landscape" as a composite entity [29]. By embedding memory within a protected natural environment, the Park challenges traditional separations between ecological preservation and historical commemoration. From a developmental standpoint, the Park functions as a form of soft infrastructure, generating flows of visitors, researchers, students, and cultural practitioners to an otherwise marginalized region. These flows, though modest in quantitative terms, possess high qualitative value, fostering networks of exchange and recognition that extend beyond immediate economic indicators. Importantly, the Park does not impose a single narrative of the Civil War. Its exhibitions, guided tours, and educational materials adopt a multiperspectival approach, acknowledging the plurality of experiences and interpretations that coexist within Greek society. This narrative openness constitutes a precondition for local acceptance and participation.

The Autumn Schools on "Memory and History in the 20th and 21st Century" and "Trauma and Historical Memory" constitute a central pillar of the Park's educational mission. Organized by the University of Patras and cultural institutions as the Grammos Festival,[2] these programs exemplify an emerging model of immersive, interdisciplinary, and participatory academic pedagogy. Participants, drawn from diverse academic backgrounds, engage in a curriculum that combines theoretical seminars with fieldwork, oral history interviews, archival research, and guided explorations of memory sites. This pedagogical structure resonates with experiential learning theory, emphasizing the cyclical relationship between concrete experience, reflection, conceptualization, and application [14]. Crucially, the spatial context is not treated as incidental, but as an active pedagogical agent. The physical presence within the former conflict zone produces what Ingold [17] describes as education of attention [30], sharpening

[2]https://www.facebook.com/FestivalGrammou, last accessed 2026/27/01

participants' sensitivity to the material and affective dimensions of historical knowledge. The mountain terrain itself becomes a text to be interpreted, with paths, ruins, and vegetation functioning as semiotic markers that complement archival documentation. This multimodal engagement destabilizes purely textual approaches to history and fosters an understanding of the past as a lived and embodied reality (see Fig. 2).

Fig. 2. The accompanying tri-fold brochure with the theoretical framework of the Autumn School (2025)

One of the defining characteristics of the Autumn Schools is their interdisciplinary orientation. Historians collaborate with archaeologists, psychiatrists, anthropologists, political scientists, and digital humanities specialists. This convergence reflects an epistemological shift away from disciplinary isolation toward integrated approaches capable of addressing complex phenomena such as collective trauma. Psychiatric contributions play a critical role in contextualizing historical narratives within frameworks of psychological injury, coping mechanisms, and intergenerational transmission. By linking personal testimonies to clinical understandings of trauma, the program avoids both sentimentalization and pathologization, situating suffering within broader socio-political structures. Digital humanities tools further expand knowledge production by enabling the mapping of memory sites, the digitization of testimonies, and the creation of interactive archives accessible beyond the immediate geographical context. Such technological mediation enhances the visibility of Grammos within national and transnational memory networks, counteracting its peripheral status.

The involvement of local inhabitants constitutes perhaps the most decisive element of the Grammos initiatives. Residents participate not merely as informants, but as co-creators of historical knowledge, contributing testimonies, guiding tours, and engaging in public discussions with students and scholars. This participatory dimension addresses long-standing patterns of epistemic marginalization. For decades, the voices of those directly affected by the Civil War, particularly from politically defeated groups, were excluded from official historiography and educational curricula. Their reintegration into public discourse represents a form of symbolic restitution. Participation also alters local perceptions of the region's value. Rather than viewing Grammos solely as a site of suffering or abandonment, inhabitants increasingly recognize its cultural and educational significance. This revaluation fosters a sense of ownership over developmental processes and reduces the alienation often associated with externally imposed projects. Moreover, the dialogical format of the Autumn Schools facilitates encounters

between individuals of different generations, ideological backgrounds, and nationalities. Such encounters do not eliminate disagreement, but reframe it within a context of mutual recognition, thereby contributing to what Habermas terms communicative rationality [31].

While the economic impact of educational tourism in Grammos remains limited in scale, it possesses strategic importance. In regions characterized by depopulation and economic stagnation, even modest inflows of visitors can support local accommodation, catering, transportation, and artisanal production. More significantly, memory-based initiatives diversify the regional economy beyond extractive or purely ecological activities. They create symbolic capital that can be mobilized in funding applications, cultural partnerships, and heritage networks. However, this commodification of memory carries ethical risks. The transformation of trauma into touristic attraction may trivialize suffering or reinforce voyeuristic consumption of violence [32]. The Grammos initiatives mitigate this risk through their educational orientation and emphasis on critical reflection rather than spectacle.

The organization of educational activities within a protected natural environment necessitates careful ecological management. Field excursions are designed to minimize environmental impact, while participants receive instruction on local biodiversity and conservation challenges, by the park's scientific director, Dr. Theodoros Siontis. This integration of ecological awareness into historical education reinforces the experiential framework advanced in this study. Students learn to perceive environmental degradation and human violence as interconnected processes rather than separate domains. Local conservation initiatives further benefit from the visibility generated by the Autumn Schools, attracting scientific interest and potential funding. In this way, memory work indirectly supports ecological sustainability by embedding environmental protection within a broader narrative of collective responsibility. In this framework, education becomes a form of soft infrastructure that contributes to both social cohesion and territorial sustainability.

Despite their innovative character, the Grammos initiatives face structural constraints. Limited financial resources, seasonal accessibility, and infrastructural deficits restrict their scalability. Moreover, political sensitivities surrounding the Civil War persist, occasionally resurfacing in public debates and threatening to re-polarize memory narratives. There is also the risk that academic actors may inadvertently dominate interpretive frameworks, marginalizing local voices despite participatory intentions. Continuous reflexivity and institutional safeguards are therefore required to maintain genuine co-production and ensure that both memory and environmental stewardship remain ethically and socially grounded.

7 Experiential Sustainability in Post-Conflict Mountain Regions: Theoretical Implications, Comparative Perspectives, and Structural Limits

Mainstream sustainability discourse remains influenced by systems theory and ecological economics, emphasizing resilience, efficiency, and resource optimization [35].

While these approaches provide valuable analytical tools, they often overlook the symbolic, affective, and historical dimensions of human–environment relations. Sustainability is thus frequently framed as a technocratic problem rather than a culturally embedded social process. The Grammos case highlights the limits of this perspective. Development initiatives that ignore political violence and collective trauma are likely to encounter resistance or indifference—not because communities oppose development per se, but because such initiatives fail to resonate with lived historical experience. The relative success of the Autumn Schools lies in their capacity to reframe development as a process of symbolic and narrative reconstruction alongside material improvement. Infrastructure, tourism, and conservation are thus embedded within broader processes of social recognition and historical dialogue.

This observation aligns with work in the environmental humanities, which interprets ecological crises as crises of meaning, identity, and historical responsibility [35]. From this perspective, sustainability involves not only ecological stabilization or economic growth, but also the reconfiguration of collective imaginaries and ethical relations to the past. The framework proposed here situates ecological regeneration and social reconciliation within a shared analytical horizon, emphasizing that landscapes actively mediate memory, affect, and political meaning. The interaction between participants, landscape, and memory illustrates the experiential relationship advanced in this study, where sustainability emerges through lived engagement rather than external intervention.

Comparable dynamics can be observed in other mountainous regions affected by political violence and prolonged social fragmentation. In the Pyrenees, memory landscapes of the Spanish Civil War have been incorporated into development strategies through memorial routes and community-based heritage initiatives. In the Western Balkans, particularly in Bosnia and Kosovo, participatory museums and oral history projects have accompanied post-war reconstruction, while similar approaches can be identified in the Caucasus and in the Andean regions of Peru. Across these contexts, development initiatives that integrate memory practices—such as memorial trails, community archives, and educational programs—tend to achieve higher levels of social legitimacy and long-term sustainability than projects focused solely on infrastructure or market integration [36, 37].

Despite important contextual differences, these cases share common structural features with Grammos, including peripheral location, demographic decline, and the persistence of contested or unresolved memories. In all instances, landscapes function simultaneously as ecological systems and as repositories of historical experience, complicating conventional development approaches. However, the Grammos case is distinctive in the systematic integration of educational practices, trauma-informed perspectives, and ecological conservation within a unified framework. This configuration allows for a more explicit articulation between memory work, knowledge production, and sustainable development, positioning Grammos not only as a local case study but as a relevant contribution to broader debates on post-conflict regional development.

Grammos, however, presents a distinctive configuration through the integration of education, trauma expertise, and ecological conservation. This articulation of memory, pedagogy, and environment creates a framework in which development is inseparable

from knowledge production and ethical reflection. The Autumn Schools function as interdisciplinary spaces where historical narratives, embodied experiences of landscape, and clinical understandings of trauma converge, extending sustainability beyond economic and ecological metrics to include epistemic inclusion and intergenerational dialogue. At the same time, the experiential model presents important limitations. Memory remains politically sensitive, and shifts in public discourse may re-politicize narratives and undermine inclusive practices. Participatory processes are shaped by persistent power asymmetries between institutions and local communities, affecting access to resources and interpretive authority. Without sustained reflexivity, participation risks becoming symbolic rather than transformative. Moreover, the model depends on cultural and institutional capital - such as academic networks and public recognition - that require long-term support.

There is also a risk of "heritagization," whereby trauma becomes formalized and depoliticized through aestheticization [32]. In such cases, memory may lose its critical potential. These constraints suggest that experiential sustainability should not be treated as a universal model, but as a context-sensitive orientation requiring continuous negotiation between ecological, social, and mnemonic dimensions.

The theoretical implications extend across multiple fields. For sustainability studies, the analysis introduces collective memory as a core dimension of development. For memory studies, it situates remembrance within ecological and spatial processes. For political ecology, it highlights how landscapes mediate conflicts over meaning and authority. For rural and mountainous development, it underscores the role of educational infrastructures in fostering social regeneration and territorial re-signification. Taken together, these observations reinforce the argument that sustainability in post-conflict landscapes must be understood as an experiential and socially embedded process.

8 Discussion and Implications

The preceding analysis of the Grammos case highlights the importance of participatory, memory-sensitive, and experiential approaches to sustainable development. Building on these findings, this section situates the study within the broader scholarly debate on heritage-led regional development and engages with recent contributions in the field.

The present study advances the concept of experiential sustainability as a framework for understanding sustainable development in post-conflict mountainous regions, emphasizing the interdependence between ecological systems, collective memory, and participatory practices. The case of Grammos demonstrates that sustainability in such contexts cannot be adequately addressed through technocratic planning or economic optimization alone, but must incorporate historical consciousness, trauma, and symbolic landscapes as constitutive dimensions of territorial development. In this respect, the findings contribute to an expanding body of literature that seeks to integrate cultural heritage and environmental assets into regional development strategies, while also extending it by foregrounding the experiential and mnemonic dimensions of sustainability.

A useful point of comparison is provided by recent research on Central and Northern Euboea, which proposes an integrated framework linking cultural heritage preservation, environmental management, spatial planning, and ICT-based tools to promote sustainable development in a peripheral and disaster-affected region [33]. That study adopts a planning-oriented and largely ex-ante methodological approach, combining GIS analysis, stakeholder consultation, and socioeconomic modeling to design cultural routes, agritourism initiatives, and digital platforms aimed at redirecting tourism flows and enhancing local economic resilience. While this approach provides a robust institutional and strategic foundation, the Grammos case highlights the importance of complementing such frameworks with participatory, experiential, and memory-sensitive practices that operate at the level of lived experience and symbolic meaning.

Rather than constituting alternative or competing paradigms, these two approaches can be understood as complementary layers within a multi-dimensional model of sustainable regional development. The Evia framework contributes structured planning mechanisms, technological tools, and governance strategies that enable the identification, organization, and promotion of cultural and environmental assets. By contrast, the Grammos case introduces processes that generate social legitimacy, ethical grounding, and cultural depth, ensuring that development initiatives resonate with local communities and their historical experience. In particular, participatory and experiential practices, as exemplified by the Autumn Schools and public history initiatives, extend the notion of stakeholder engagement beyond formal consultation toward epistemic inclusion and narrative co-production. This shift is especially significant in post-conflict contexts, where historical marginalization and contested memories shape local perceptions of development and legitimacy.

At the same time, important points of convergence emerge between the two studies, particularly regarding the mobilization of cultural and environmental resources as drivers of sustainable development. The Evia model emphasizes the design of cultural routes, the use of GIS-based mapping and digital platforms, and the promotion of alternative tourism forms such as agritourism and thematic travel experiences. Similarly, the Grammos case - although less reliant on formal technological tools - develops parallel practices through memory routes, site-based learning, and embodied engagement with landscape. Walking through historically charged environments, engaging with oral testimonies, and participating in place-based educational activities constitute forms of experiential mapping that complement and enrich spatial planning methodologies. In this sense, experiential sustainability can be understood as a qualitative extension of planning-oriented frameworks, adding affective, mnemonic, and ethical dimensions to otherwise technocratic models.

These convergences suggest that sustainable development in peripheral regions benefits from integrating quantitative and qualitative approaches, combining spatial analysis and economic modeling with embodied and participatory practices. While GIS tools and digital platforms enable the visualization and management of resources, experiential engagement fosters deeper connections between individuals, communities, and landscapes, contributing to long-term social sustainability. Moreover, both studies underscore the importance of alternative tourism strategies that move beyond mass tourism models toward more localized, culturally embedded forms of development. In

Evia, this is achieved through the diversification of tourism products and the activation of underutilized inland areas, while in Grammos, it takes the form of educational and memory-based tourism that transforms a historically stigmatized landscape into a site of dialogue and reflection.

From a theoretical perspective, the comparison highlights the need to expand dominant sustainability frameworks to account for the symbolic, affective, and historical dimensions of human-environment relations. Conventional models, rooted in systems theory and ecological economics, tend to conceptualize sustainability as a problem of resource management and efficiency, often neglecting the role of memory, identity, and historical injustice. The Grammos case demonstrates that in post-conflict landscapes, trauma is not a residual or external factor but a structural condition that shapes how communities inhabit space and engage with development processes. Consequently, sustainability must be reconceptualized as a culturally embedded and morally grounded practice that integrates ecological regeneration with processes of social recognition and historical reconciliation.

Furthermore, both case studies implicitly challenge the notion of landscapes as passive resources, instead presenting them as active agents in the production of meaning and social relations. In the Evia framework, landscapes are treated as integrated socio-ecological systems whose cultural and environmental assets can be strategically mobilized for development. In Grammos, landscapes function additionally as mnemonic and affective infrastructures, carrying the traces of past violence and mediating the relationship between history and the present. This dual understanding reinforces the argument that sustainable development must engage not only with the material properties of space but also with its symbolic and experiential dimensions.

Another important implication concerns the concept of participation. While participatory governance is central to the Evia model, primarily through stakeholder consultation and community involvement in planning processes, the Grammos case extends participation into the epistemic domain. By recognizing local inhabitants as co-producers of knowledge and legitimate narrators of history, participatory memory practices address forms of epistemic injustice that often characterize post-conflict societies. This broader understanding of participation enhances both the ethical and practical dimensions of sustainability, as development initiatives that incorporate local narratives are more likely to achieve social acceptance and long-term viability.

At the level of practice, the combined insights of the two cases are particularly relevant for peripheral and post-crisis regions facing structural challenges such as depopulation, environmental degradation, and economic marginalization. The Evia study demonstrates how integrated planning, ICT tools, and cultural route development can generate measurable economic benefits and support regional resilience. The Grammos case, in turn, illustrates how memory work, educational initiatives, and participatory practices can contribute to social cohesion, symbolic re-signification, and the transformation of stigmatized landscapes. Together, they indicate that resilience emerges not only from infrastructural and economic interventions but also from the capacity of communities to reinterpret their past and reconfigure their relationship with place.

In this context, the present study makes a distinct contribution by foregrounding experiential sustainability as a conceptual bridge between environmental systems and

historical consciousness. By shifting attention from planning instruments to embodied practices and memory processes, it expands the analytical scope of sustainable development and highlights the importance of integrating ethical, symbolic, and affective dimensions into development strategies. This perspective is particularly relevant for post-conflict and historically burdened regions, where the success of development initiatives depends not only on their technical design but also on their ability to engage with the complexities of memory and identity.

In conclusion, the comparison with contemporary heritage-led development frameworks demonstrates that sustainable regional development in peripheral areas is most effective when strategic planning and experiential practices operate in synergy. Integrated planning, digital tools, and tourism diversification provide essential structural conditions, but long-term sustainability depends on the extent to which development processes are embedded in participatory, memory-sensitive, and culturally meaningful practices. The Grammos case thus contributes to the broader scholarly conversation by showing that sustainability is not only a matter of managing resources and designing policies, but also of inhabiting history and negotiating the relationship between past, present, and future.

The preceding discussion highlights the need to distinguish experiential sustainability from dominant planning-oriented and heritage-based frameworks. While these approaches share common objectives, they diverge in their understanding of landscape, memory, and participation. Table 1 provides a schematic comparison, clarifying the specific contribution of the experiential approach.

Table 1. Comparison of experiential sustainability with conventional and heritage-based development approaches

Dimension	**Conventional sustainability models**	**Heritage/Planning-based models (e.g., Evia)**	**Experiential sustainability (this study)**
Core focus	Resource management, efficiency, resilience	Integrated spatial planning, cultural assets, tourism development	Lived experience, memory, and human–landscape interaction
Role of landscape	Resource or environmental system	Cultural and environmental asset	Active mediator of memory, affect, and meaning
Approach to heritage	Secondary or instrumental	Structured through cultural routes, GIS, tourism products	Embodied, memory-based, participatory engagement
Participation	Stakeholder consultation, governance	Participatory planning and consultation	Epistemic inclusion and co-production of meaning
Knowledge production	Technical and expert-driven	Mixed (technical + stakeholder input)	Experiential, place-based, dialogical
Role of memory	Largely absent	Indirect (heritage interpretation)	Central (trauma, collective memory, historical experience)
Development logic	Technocratic, policy-oriented	Strategic, planning-oriented	Socially embedded, ethically grounded
Key tools	Models, indicators, policy frameworks	GIS, ICT platforms, cultural routes	Educational practices, public history, embodied experience
Outcome emphasis	Economic growth and environmental balance	Regional development and tourism diversification	Social cohesion, reconciliation, sustainable meaning-making

9 Conclusion

This article argued that sustainable development in mountainous post-conflict regions cannot be reduced to economic revitalization or environmental management alone. Through the case of Grammos, it has demonstrated that landscapes function simultaneously as ecological systems and as carriers of collective memory, that traumatic history continues to shape contemporary social relations and territorial identities, and that participatory educational initiatives are capable of transforming memory from a divisive burden into a resource for dialogue and social regeneration. Sustainability, in this context, emerges not as a purely technical objective, but as an experiential process integrating ecological regeneration, cultural remembrance, and collective agency. The Grammos experience suggests that development becomes socially viable only when it addresses not merely material needs, but also symbolic wounds, moral recognition, and historically rooted forms of exclusion.

From this perspective, important implications arise for public policy and institutional practice. Development planning in post-conflict regions must explicitly acknowledge

the enduring presence of historical trauma and contested memory rather than treating them as secondary or external variables. Ignoring these dimensions risks reproducing distrust and social fragmentation, thereby undermining long-term developmental goals. At the same time, educational infrastructure in peripheral and mountainous areas should be understood as a strategic investment rather than a marginal cultural luxury. Universities and cultural institutions possess the capacity to act as mediators between local experience and broader epistemic communities, fostering forms of knowledge production that are both analytically rigorous and socially grounded.

Equally crucial is the institutionalization of participatory memory practices. The inclusion of local communities in heritage governance, educational programming, and interpretive decision-making is not only a matter of democratic legitimacy, but also a condition for epistemic inclusion and social sustainability. Without such participation, memory initiatives risk reproducing hierarchies of knowledge and authority that mirror the very injustices they seek to address. Furthermore, the growing field of memory-related tourism requires careful ethical regulation. When trauma is transformed into a consumable spectacle, it may lose its critical force and become detached from the lived realities of affected populations. Educational orientation, dialogical formats, and reflexive interpretation are therefore essential to prevent the commodification and trivialization of historical suffering.

Finally, the Grammos case underscores the importance of integrating ecological conservation and historical commemoration within unified management frameworks. Protected natural areas in post-conflict zones cannot be treated as politically neutral spaces. They are simultaneously biological habitats and mnemonic landscapes, shaped by human violence as much as by geological and ecological processes. Sustainable governance in such contexts must therefore balance biodiversity protection with responsible historical interpretation, recognizing that environmental and symbolic restoration are deeply intertwined.

More broadly, Grammos illustrates that sustainability is not merely a technical challenge of optimizing resources or stabilizing ecosystems, but a profoundly ethical and historical undertaking. Landscapes marked by violence demand forms of development that do not seek to silence or erase the past, but instead learn to inhabit it responsibly. The experiential relationship between humans, memory, and ecosystems does not promise reconciliation in the sense of definitive closure. Rather, it enables modes of coexistence with unresolved histories, transforming them into fragile yet productive foundations for a more reflective, pluralistic, and inclusive future. In this sense, sustainable development becomes not the negation of suffering, but the cultivation of conditions under which life, memory, and ecological integrity may persist together.

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