

Commentary

# Land Degradation and Mitigation Policies in the Mediterranean Region: A Brief Commentary

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Received: 15 September 2020; Accepted: 6 October 2020; Published: 9 October 2020



**Abstract:** Land degradation is more evident where conditions of environmental vulnerability already exist because of arid climate and unsustainable forms of land exploitation. Consequently, semi-arid and dry areas have been identified as vulnerable land, requiring attention from both science and policy perspectives. In some regions, such as the Mediterranean region, land degradation is particularly intense, although there are no extreme ecological conditions. In these contexts, a wide range of formal and informal responses is necessary to face particularly complex and spatially differentiated territorial processes. However, the fit of responses has been demonstrated to be different over time and space according to the underlying socioeconomic context and the specific ecological conditions. The present commentary discusses this sort of “entropy” in the policy response to land degradation in Southern Europe, outlining the intrinsic complexity of human–nature dynamics at the base of such processes. Reflecting the need of differentiated regional strategies and more specific national measures to combat desertification, three policy frameworks (agro-environmental, economic, social) with an indirect impact on fighting land degradation have been considered, delineating the importance of policy assemblages. Finally, the importance of policy impact assessment methodologies was highlighted, focusing on the possible responses reinforcing a continental strategy against land degradation. By evidencing the role of participatory planning, developmental policies indirectly addressing land degradation reveal to be an important vector of more specific measures abating desertification risk, creating, in turn, a favorable context for direct interventions of mitigation or adaptation to climate change.

**Keywords:** policy impact; desertification risk; Southern Europe; local development; national strategy

## 1. Introduction

Land degradation implies complex ecological processes where soil fertility is progressively reduced. Without corrective measures, such processes may lead towards an irreversible condition of desertification and loss of the original agricultural and forestry productivity, from both the ecological

and the economic perspective [1–3]. Desertification has inevitable repercussions on local societies and economic activities [4]. Extreme weather events are particularly important natural forces of change, since prolonged drought and heavy rainfalls cause land quality depletion. Geomorphology, vegetation cover, and soil types also contribute to the proneness of land degradation [5–7]. The improper use of soil and water resources, together with deforestation, overgrazing, wildfires, habitat fragmentation, crop intensification, and urban expansion, are pivotal causes of land degradation [8]. Above all, these dynamics trigger desertification risk through various channels, affecting soil erosion, contamination, salinization, compaction, sealing, as well as soil biodiversity loss, organic matter decline, landslides, and flooding [9]. However, indirect processes such as land abandonment, loss of local cultures, rural traditions, and biodiversity can potentially contribute towards increasing the level of land degradation in a given local society [10–12].

The United Nations Convention to Combat Drought and Desertification (UNCCD) defined desertification as a form of “land degradation in arid, semi-arid and dry sub-humid areas, resulting from various factors, including climatic variations and human activities”. This definition recognizes the role of both natural causes and human pressure on terrestrial ecosystems [13]. On the basis of these premises, it has been argued that land degradation is triggered more easily where conditions of environmental vulnerability already exist because of arid or semi-arid climate, and unsustainable forms of land exploitation are observed [14]. Consequently, arid, semi-arid, and dry areas have been identified as the most vulnerable areas of the globe that require urgent attention from both science and policy perspectives [15]. Apparent, latent, or potential forms of land degradation have been detected throughout the continents [16].

In some biomes, such as the Mediterranean region, land degradation is particularly intense, although there are no extreme ecological conditions considering that generally, seasonal drought characterizes this region [17]. However, human causes of land degradation strongly impacted on the land quality of this biome [8]. In such region, the areas exposed to land degradation are characterized by somewhat fragile ecosystems, very sensitive to the exploitation of natural resources, for which implementing specific soil conservation measures and landscape protection actions has become imperative [18]. While the definitions of land degradation and desertification are rather clear and operationally applicable to a broad range of socioeconomic contexts worldwide, remedies and contrasting actions seem to be more heterogeneous, following site-specific (more or less formal) practices in some cases, or national-wide (or even continental-wide) policies in other cases [19]. This delineates a sort of entropy in the policy response to land degradation, even in homogeneous contexts, such as the Mediterranean basin [20]. While a broad set of formal and informal responses is necessary to face particularly complex and spatially differentiated environmental degradation processes, the fit of responses has been demonstrated to be largely different over time and space according to the underlying socioeconomic context and the specific ecological conditions [21].

It is clear that there are no unique remedies to land degradation, although there is still confusion on the possible policy alternatives to apply in a given territorial context [22]. Furthermore, there is still a lack of knowledge on the linkages between existing policies (often oriented to face other sustainability issues) and land degradation [23]. The adaptation to climate change, the mitigation of external risks (e.g., drought, flooding, landslides, poverty, just to cite the most pervasive), the regulation of migratory flows, and more general measures of local development exert important—while indirect—effects on the capacity of the strategies to counteract land degradation and desertification risk, depending also on the background socioeconomic context. A refined understanding of such linkages seems to be particularly appropriate in advanced economies, and especially in Europe, where multiple supranational policies (e.g., environmental, social, economic) were designed and promoted under the umbrella of the European Union. In line with these assumptions, our commentary discusses the intrinsic and paradoxical relationship between the complex phenomena underlying land degradation [24] and the articulated and indirect responses to such dynamics. In particular, we focused on the latent impact of generalized, developmental strategies and land degradation [25], exemplifying three cases dealing

with agro-environmental, economic, and social policies at large. Southern Europe has been selected as the analysis' background, since the Mediterranean basin was largely seen as a sort of "laboratory of land degradation" with human pressure on land stratified along millennia of history and a plethora of (more or less effective) responses, in a context of spatially varying sensitivity to land degradation. Human–nature interactions in the Mediterranean basin and in the Middle East were likely the most specific, consolidated, and continuous, since these areas have been inhabited [26].

Based on this framework, our commentary proposes (i) a brief review of the basic anthropogenic drivers of land degradation in Mediterranean Europe, testifying to the intrinsic complexity of human–nature dynamics at the base of such processes, and focusing on the most relevant ones (Section 2); (ii) a short description of the international policy (and more specifically, the United Nations convention), reflecting the need of differentiated regional strategies and more specific national measures to combat desertification with a specific focus on Southern Europe (Section 3); (iii) a summary analysis of three policy frameworks (agro-environmental, economic, social) with indirect impact on fighting land degradation in the Mediterranean basin, delineating the importance of policy assemblages (Section 4); (iv) a comment on the importance of policy analysis (Section 5); (v) a brief discussion on the possible responses reinforcing (indirect) policies against land degradation in such socioeconomic contexts, outlining the role of participatory planning (Section 6); and, finally, (vi) a concluding section (Section 7) which summarizes the main findings of this work.

Based on this structure, our commentary alimnts a broad (research and normative) debate on the appropriate contextual strategies fighting desertification in an affected region (Southern Europe) representative of Mediterranean-type ecosystems. More specifically, this article aims at providing an original discussion of direct and indirect measures against land degradation, providing adequate analysis of the intimate linkage between economic, social, and environmental policies. Being a relevant example of (non-environmental) measures with strong linkage with desertification, developmental policies that indirectly address land degradation issues were finally contextualized and discussed as an important vector of more specific actions containing desertification risk and reducing soil depletion [27], creating, in turn, a favorable socioeconomic context for direct interventions of mitigation or adaptation to climate change. This approach reveals the importance of policies oriented toward a sustainable development of local territories (taking account together of the three sustainability pillars: environment, society, and economy) as a particularly appropriate response to complex global phenomena, such as land degradation.

## 2. Land Degradation: Apparent and Latent Drivers in Southern Europe

Among the most impactful drivers of land degradation, the anthropogenic pressure of agriculture depends on technically incorrect practices, implemented solely for the purpose of maximizing yields through the unsustainable use of the means of production, e.g., chemical fertilizers and pesticides, excessive use of water resources, unsuitable crop rotations, and intense tillage altering the structure of the soil [28]. At the same time, land abandonment in marginal and poorer agricultural systems constitutes the premise for soil degradation, even up to the extreme consequences of hydrogeological instability [29]. Intensive livestock, if settled without taking account of the environmental context, can lead to soil impoverishment and/or contamination, leveraging land degradation [30]. Although there has been an overall reduction in the number of livestock in the Mediterranean region over the last few years, the environmental impact due to livestock farming has remained unchanged or has grown due to animal concentration and/or high specialization of such activities [31]. In many cases, livestock was introduced into non-suitable areas, causing agro-ecosystem imbalances, e.g., because of nitrate pollution.

Regarding the unsustainable use of water resources, the demand for water for civil, agricultural, and industrial uses over the past decades has led to a strong increase in withdrawals and water derivations, seriously compromising the processes of renewal of the resource. Agriculture accounts for about 60–70% of total annual water consumption [32]. The progressive expansion of highly intensive

and specialized crops, to the detriment of more traditional cultivation systems, has stimulated the increase in irrigation needs, especially in a context of climate change with decreasing rainfalls [33]. If agriculture is the productive activity that absorbs most of the water resources, the importance of water withdrawals for civil uses cannot be overlooked, particularly in areas with high population density (e.g., coastal areas). In such contexts, anthropogenic pressure determines an unsustainable use of land resources [34].

Although ecosystems have the ability to replenish themselves, this may happen in a very long time. For instance, wildfires still represent a plague that heavily compromises natural defenses against desertification processes. In particular, wildfires “waterproof” the soil, making it more exposed to erosion, altering the ecosystem, and threatening plant and animal communities. In addition to agriculture and pastoralism, the main cause of wildfires in the Mediterranean region is informal building of fringe areas, entailing cascade implications on soil sealing and altering the local hydrological regime [35].

In this direction, urban expansion is a key issue of soil degradation, covering the land with artificial waterproof materials [36]. Such an irreversible form of land consumption leads to the loss of all the ecosystem services related to soil, affecting ecological processes such as energy fluxes and the water cycle, besides that the impermeable land increases the risk of flooding [37]. Urbanization implies the partial removal of fertile soils, both directly (sealing) and indirectly (for the use of soils consequent to population growth, such as roads, shopping centers, or landfills). Soil contamination—both point and diffused—which determine even more intense forms of soil degradation, and the consequent alteration (e.g., fragmentation) of the landscape are also related to these phenomena [38].

Tourism growth, in turn, becomes an element of strong environmental impact if combined with other pressures on ecologically fragile areas [39]. Tourism pressure in coastal areas has exerted a significant impact on local communities, leading to lack of services such as water supply and urban waste disposal, but also to the increase in pollution (e.g., air, water, noise) and to the increased threat of biodiversity loss [40].

In the long term, the causal chain triggered by a rising tourism pressure can lead to a significant loss of agricultural land [41]. Earlier studies report conflicting opinions about the link between tourism development and land degradation in the Mediterranean basin, also identifying potentially beneficial effects [42]. These effects can be observed at various spatial and temporal scales. At the regional level, for instance, the development of tourism can stimulate greater environmental sensitivity through policy responses [43], or through the greater awareness of the natural heritage that has driven a positive impact on local economies [44]. All these processes may have off-site, indirect, and unwanted effects, stimulating depopulation of rural areas and land abandonment especially in economically marginal, less accessible hilly and mountainous districts where local communities have experienced increasing aging and an intense sort of “young drain” and “brain drain” toward big cities and more accessible, flat, and socially dynamic rural areas. Such processes were observed with similar timing, intensity, and spatial direction in Portugal, Spain, Italy, and Greece (and although in a partial fashion, also in Southern France), suggesting how rural depopulation in the affected Mediterranean countries (sensu UNCCD, Annex IV) is a particularly relevant issue to land degradation and desertification risk [32].

The intimate connections between depopulation and ecological degradation of traditionally rural districts have been extensively analyzed by Alados and coworkers [1] in the Spanish Pyrenees. In Southern Italy, Ferrara and coworkers [4] verified that socioeconomic dynamics of change were particularly moderate (or almost negligible) in mountainous municipalities of Basilicata region, exerting indirect negative effects on soil quality, enhancing, e.g., extensive phenomena of soil erosion with a direct impact on land degradation. By comparing socio-environmental syndromes of land degradation in two rural contexts of Italy, Smiraglia and coworkers [12] demonstrated the intimate nexus between depopulation, land abandonment, and soil erosion/landslide risk in highly vulnerable inland districts at low (or very low) population density. With a comparative study of more than 8000 municipalities in Italy, Salvati [43] demonstrated that rural communities in inland, mountainous districts are particularly

exposed to the extensive phenomena of land abandonment and degradation, with depopulation being the main engine of such dynamics. Imeson [32] provided a more comprehensive description of such processes, confirming the role of depopulation in rural landscape degradation in various contexts of Spain, Greece, and Portugal and suggesting generalized (positive and normative) approaches to land abandonment at wider scales.

Based on these considerations, it has been observed that rural populations in the driest regions of Southern Europe are often subject to geographical isolation, which inevitably reverberates in a greater vulnerability to natural disasters due to difficult access to public services such as education, health, information, and social benefits [45]. The economic disadvantage brings migratory movements, leading to even worse conditions of poverty due to the difficulty of ensuring adequate employment and wages in areas with a high population concentration. Once again, this process particularly affects the weakest actors, such as women, young people, and currently also the over 50s, as they are more difficult to relocate in the job market, indirectly contributing to other social problems with local and regional impact [46]. Land degradation, in this sense, favors the progressive depopulation of rural areas, starting from the more marginal ones, with the relocation of populations to urban and coastal areas [47]. In Southern Europe, since World War II, a general abandonment of interior land has been observed thanks to industrialization processes, low agricultural incomes, and different market rules with cities [48]. Even today, albeit at a slower pace, rural–urban internal migrations are intense [49]. The relationship between the bearing capacity of the ecosystem, population density, and land degradation appears in many ways controversial even if, in conditions of aridity and poor soil fertility, rapid population growth can lead to generalized poverty conditions, accelerating social disparities [50].

### **3. Fighting Against Land Degradation: A Global Perspective**

The association of land degradation with socially and economically relevant processes like poverty, human pressure, urban–rural migrations, urban sprawl and urban densification, and uncontrolled economic and production development has led to a relatively broad policy framework against desertification risk [51], in turn promoting regional “philosophies” of intervention [52]. A total of 197 countries have joined the UNCCD, having the objective to “fight” against desertification and to mitigate the effect of drought on vulnerable land within the framework of Agenda 21. This objective is primarily directed to the countries seriously affected by desertification risk, through international cooperation and partnership interventions; “achieving this objective will involve long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level” (UNCCD, Art. 2.2) [13].

The Convention includes four annexes devoted to local specificities and to the development of regional programs addressing the specificity of land degradation issues in Africa, Asia, Latin America, the Caribbean, and the North Mediterranean. These annexes highlight the role played by agricultural, urban, and tourism development in triggering desertification risk, with particular emphasis on rural and marginal areas. Reflecting a regional-based action plan to combat land degradation, UNCCD stimulates countries to draw up and undertake specific programs at a local scale by establishing the necessary coordination mechanisms and collaboration with other initiatives at regional and continental scales.

### **4. (Indirect) Policy Strategies Against Land Degradation: Examples From a Regional Perspective**

To renew a wide debate on the actual relationship between economic systems and land degradation at different intervention scales, and the appropriate solutions to mitigate the social impacts of drought and desertification, is really urgent for Mediterranean Europe countries, in light of their sustainable participation in the European integration process [53]. It has been argued how halting desertification cannot be separated from the key issue of sustainable development in dry areas as a contribution

to the long-term wellbeing of populations [54]. In this commentary, agro-environmental, economic, and social measures, have been selected and analyzed as indirect strategies, exemplificative of a possible policy assemblage combating desertification. A more comprehensive policy analysis was finally discussed with the aim at contributing to an informed strategy framework against land degradation for Southern Europe.

#### 4.1. Agro-Environmental Policies

While remaining mostly indirect, the actions run in the framework of the European Union Common Agricultural Policy Among seem to be especially impactful on land degradation. Crucial agro-environmental schemes that include mechanisms favoring or containing soil degradation are those regulating land-use change in rural districts [55,56]. These strategies stimulate users to make decisions that preserve soils against degradation or moving toward a more intense use, possibly increasing the probability of resource depletion [57]. Rural policies, incentives, and subsidies focusing on cultivations or farmers promote the transformation of traditional cropping into intensive cropping systems that are not tuned finely with the environmental characteristics [58]. Monetary support enhances low-profit rural systems, sometimes promoting negative effects on the land. In this regard, marginal areas were abandoned at the end of the subsidy program, and soil erosion was often documented in this case [59]. Modifying traditional crops into intensive crops was economically sustainable in few cases, and a complete analysis of costs and benefits was lacking in most cases [60]. Such analyses often indicate that the costs of land transformations outweigh the benefits, when all productivity dimensions are considered appropriately [61,62]. More specifically, (i) the market profits of intensive cropping are high, but (ii) the environmental externalities—when appropriately evaluated using monetary approaches—by far outweigh these economic advantages [63].

In some cases, agro-environmental schemes resulted to be an indirect driver of land degradation, particularly in the most sensitive Mediterranean areas. Solutions mitigating this causal chain include (i) a better coordination and integration of policies to encourage land enhancing activities, by strengthening soil protection measures, and (ii) a more integrated approach to the growth of (sector) policies in order to take adequate account of multifunctional land-use options [64–67]. In this way, individual policy tools may work harmoniously, and negative effects can be contained. At the country level, efficient measures should be also supported, and agro-environmental regulations should be integrated into a new agricultural subsidy system leveraging a sustainable and balanced spatial development, avoiding feedback impacts across crops and/or farm types [68,69]. Subsidies should be designed to be completely responsive to land-use systems, in order to mitigate the progressive conversion of intensive productions [70–72]. Refined frameworks are needed to evaluate these externalities and internalize the costs and benefits of landscape transformations into the market prices of the goods and services produced [73]. Ideally, mitigation strategies should be implemented with the aim of reducing the negative impact of externalities, assigning a more active role to local stakeholders [74].

#### 4.2. Economic Policies

Strategies focused on agriculture are demonstrated to consolidate social cohesion, representing a key pillar of sustainable rural systems [75]. A sustainable agriculture requires a strong economic dimension, although the spatiotemporal variability in crop returns is largely observed in both advanced and emerging countries. This variability pushes production changes, better adapting to local markets. However, a large infusion of government funds was associated with more frequent shortfalls in producer income in some socioeconomic contexts [76]. Sustainable strategies can be oriented toward a “total production” thinking, promoting “horizontal” land integration (e.g., agro-silvo-pastoral management) and a “vertical” integration of the products, leading to process and marketing mechanisms aimed at maximizing and optimizing investments [77]. Modest land productivity, inappropriate infrastructures,

and social constraints reduce investments of private entrepreneurs in areas undergoing the early processes of soil degradation [78].

In this regard, investments for the development of arid regions should be fixed within national (or regional) targets vis à vis an appropriate strategy of land degradation [79]. Priorities should consider suitable approaches aimed at (i) providing sustainable inputs and services [80]; (ii) ensuring productivity gains will be not lowered by the simultaneous growth of farmers; and, finally, (iii) establishing measures for individual and collectives to boost investments more specifically directed to arid lands [81]. The ability of policy to mitigate soil degradation depends on (i) how research tools highlight basic dimensions of the economy–degradation linkage, and (ii) how “appropriate” and “inappropriate” strategies affect a poor rural household’s decisions to degrade (or not) their land [82]. However, the impact of local socioeconomic transitions on desertification risk is less known and needs substantial research [83]. The “local” dimension has an impact on the individual decision to reduce (or accelerate, at least indirectly) land degradation [84–86].

#### 4.3. Social Policies

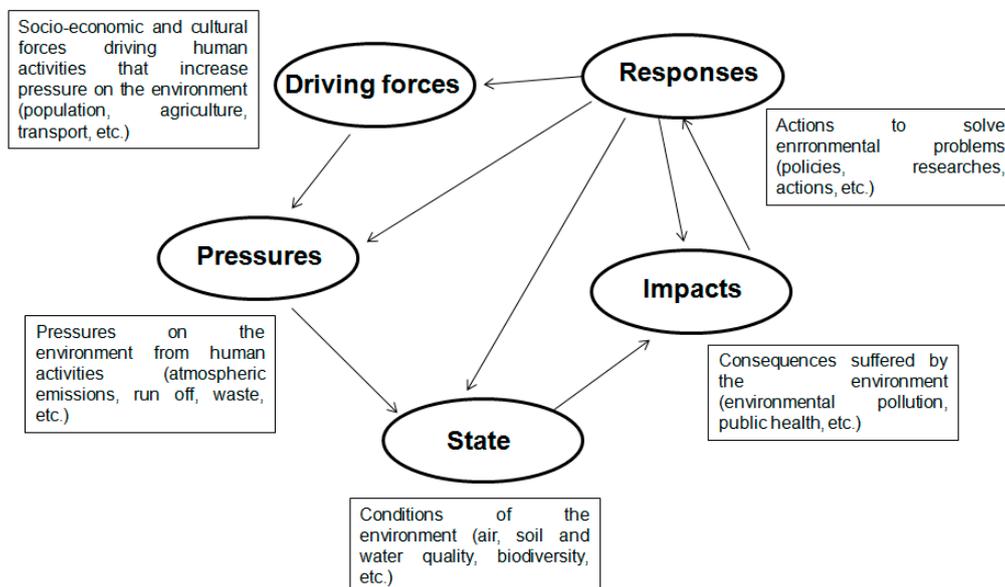
Population de-concentration, the spatially balanced development of human settlements, the regulation of internal migration, and the social integration of foreign migrants are cases of social policies with a possible positive contribution to fighting land degradation in a given region or local community [87]. Social policies combating poverty are also fundamental to a sustainable environmental transition [88–90]. A sustainable context allows people to accept and promote more environmentally friendly practices. Assuming different sets of policy options as often interrelated [91], examples of social policies with an indirect impact on land degradation include the following arguments: (i) as rural poverty is a gendered phenomenon, an equitable participation of women in economic life is necessary to abate social exclusion [92–94]; (ii) policies promoting human resources development (especially in the primary sector) should encourage training schemes specifically addressing environmental sustainability [95]; (iii) information dissemination is finally required in rural areas [96], incorporating also migration in a wider set of policies readdressing human desertification in marginal districts [97].

### 5. Policy Analysis

Socioeconomic planning should recognize differentiated environmental challenges depending on fluctuations of the related ecological conditions [98]. This assumption makes the assessment of socioeconomic losses of land degradation a substantially underdeveloped task in regional studies [99]. The adoption of multidisciplinary frameworks involving stakeholders is a necessary positive approach [100]. At the same time, normative frameworks should include (i) strategies developing demographic, climate, and land-use scenarios at different temporal scales (short/medium/long term), (ii) a strategic analysis of the impact of past policies on land degradation, and (iii) the exact quantification of desertification costs, e.g., through appropriate models [101–103]. Policy analysis has proposed basic approaches suitable for the identification and quantification of desertification drivers [104–107]. In advanced economies, policy analysis forms a pivotal dimension of social sciences [108]. Some issues are important when evidencing the possible impact of policies [109]: (i) policy formulation does not always result in a direct impact on land degradation; (ii) policies have both explicit and implicit effects [110] and (iii) non-linear desertification processes need specific strategies addressing such complex dynamics [111].

Policy analysis should, therefore, avoid specific “sectoral” and “disciplinary” approaches, moving toward a full integration of environmental and socioeconomic frameworks [112]. International schemes—e.g., Driving Forces, Pressures, Impact, State, and Responses (DPSIR)—may evaluate the intrinsic linkage between man and nature [113] and can be a support to formulate strategies to combat desertification (Figure 1). This approach indicates how measures contrasting land degradation require a thorough definition of needs and actions within a range of issues [114]. In a truly land conservation framework, the design of the specific measures brings evident results in a broad group of social

actors [115]. Behavioral changes in a given social actor are the (direct or indirect) outcome of the measure [116], and outline the centrality of identifying effects' causality, i.e., reconnecting drivers to pressures depending on the general state of a given landscape [117]. Based on this approach, measures are formalized in a set of possible responses [118].



**Figure 1.** An Exemplificative Driving Forces, Pressures, Impact, State, and Responses (DPSIR) Scheme Applied to Land Degradation in Mediterranean Europe.

## 6. Reinforcing Indirect Policies Against Land Degradation: The Role of Participatory Planning in a “Sustainable Development” Vision

The participation of local actors in the strategic planning of territorial policies represents a further crucial point in the fight against land degradation and environmental disparities [119]. This has been found in various case studies conducted in Greece, Italy, and Spain regarding the involvement of local stakeholders on the definition of planning strategies [120–122]. A satisfying fulfillment of landscape restoration needs synergic collaborations among stakeholders, empowerment and capacity building of local communities to abet them to fully engage in restoration activities, and a facilitating public policy context to open the way for local population to be effective participants in the decision-making process [123]. Participation in environmental decision-making is nowadays considered a democratic right. However, it has been observed that stakeholders often have a fairly heterogeneous perception of degradation and, in many cases, also exhibit feelings of “helplessness” which can consolidate conditions of imbalance on a local scale [124]. It is therefore appropriate to involve the local actors from the preliminary analyses by involving them in the “institutional” dialogue together with the political and scientific part [125].

Multi-stakeholder participation is a process based on trust, equity, and empowerment where interested individuals, groups, and/or organizations can directly influence decision-making processes [126]. In most cases, active multi-stakeholder participation is proven to provide relevant information that complements the existing scientific findings [127]. Furthermore, the procedure strengthens the consensus between participants, improves accuracy in the planning phase, and increases the legitimacy of the process in general [128]. Multi-stakeholder participation is thus considered to provide strong management plans and to give valuable and comprehensive feedback for future policy design [129]. Participatory planning is based on: (a) involving all related stakeholders in the decision-making process, (b) working closely with them during the implementation phase of the project, and (c) make them responsible for the long-term social–ecological maintenance of the areas involved [130]. Stakeholders who actively participate in decision-making processes have enhanced

adaptive capacity and are better qualified to manage social–ecological systems such as restoration areas [131].

This assumption is fully grounded on the intrinsic definition of “sustainable development”, which directly refers to the holistic approach and temporal processes leading to the principle of sustainability, interpreted as a target objective towards man–ecosystem balance. In this context, different operational targets of participatory planning may refer specifically to the principles of “strong” or “weak” sustainability—although being both linked with the concept of sustainable use of land resources. According to the paradigmatic vision of “weak sustainability”, the desirable development model should guarantee a stock of resources (human and natural) at least not decreasing until the next generation; this assumes—economically speaking—the full substitutability of the two types of capital, since in order to keep the sum between human and natural capital constant over time, the decrease in one of the two could be compensated by the increase in the other. While being more easily applied in several operational contexts, this approach opposes the more orthodox principle of “strong sustainability”, which instead starts from the assumption of strict complementarity between human and natural capital, for which each component of the stock must be kept constant, since the production of one depends directly on the availability of the other component.

The simple definition of sustainable, participatory planning and policies as processes that aim at improving the quality of human life without affecting ecosystems, clearly indicates that “sustainability”, as a strategic attribute of socio–environmental processes and responses to change, has quantifiable limits. By contrast, sustainability remains a call to politically act in a truly balanced perspective, assuming the dualism of positive approaches (the science of sustainability) and regulatory approaches (the policy of sustainable development), which established common goals and values. Increasingly holistic and integrated perspectives, receiving the greatest inspiration and practical translation in the 2030 Agenda, are the necessary vision when designing participatory planning actions against land degradation.

## 7. Concluding Remarks

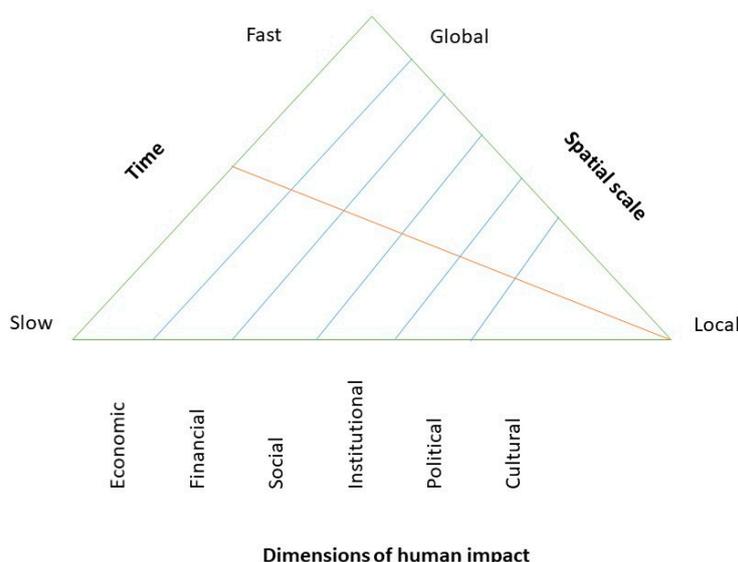
The environmental and social peculiarities shared by the countries of the Mediterranean region contribute to fuel a particularly complex spiral, in which land degradation processes are mainly identified with the abandonment of agricultural activity, the deterioration of landscape structures, the unsustainable exploitation of natural resources, and the uncontrolled development of economic and industrial activities, especially in flat areas [132–134].

Mediterranean countries have undergone considerable economic development in recent decades; however, regional disparities do not seem to have decreased significantly. Less favored and arid districts in Portugal, Spain, Italy, and Greece display critical ecological conditions requiring integrated policy interventions, both from the environmental and socioeconomic side. These interventions are naturally framed in the broader context of “sustainable development”. Contributing to such transition toward “sustainable planning” against desertification risk, policy analysis is especially appropriate to estimate (and compare) the intrinsic effectiveness of alternative measures to counteract land degradation, especially when measures are designed to act on a complex syndrome of factors underlying desertification risk (e.g., the causal chain depopulation/land abandonment/soil erosion/desertification risk, typical of hyper-rural areas and mentioned in Section 2).

As an example, we have earlier documented how the negative impact of land degradation definitely contributes to economic polarizations, amplifying social disparities between land degradation free and prone areas [135–137]. The role of territorial governance policies has therefore assumed a significant role in the joint containment of regional socioeconomic disparities and spatial imbalances in land resources and environmental quality at large, considered at the base of any desertification process. In this sense, political uncertainty and economic insecurity, which have emerged in recent years, can represent an obstacle to the effective application of truly integrated land protection measures, especially in arid and marginal areas of the globe [138–140].

The impacts of environmental policies depend on a series of complex and multiple aspects that do not always allow for an immediate and direct feedback on local conditions for a truly sustainable development, also by virtue of the dynamic and non-linear nature of the degradation processes [141]. Furthermore, also the processes of non-decision-making, non-formulation, and non-implementation of policies are to be considered as real policy implementation [142]. For example, the cost of inaction is a hitherto underestimated problem [143]. As a result, the process of policy implementation is not characterized by straight decisions put into practice but rather as a confused framework that leads to ineffective decision-making [144].

Earlier studies have also demonstrated that inaction is a strategy with (more or less tangible) effects on the environment and with costs not yet fully highlighted, complicating the already complex interpretative framework [145]. Territorial interventions should avoid fragmented and local approaches, opting for a full integration of short- and long-term strategies according to the time-scale interplay and the risk of sectoral imbalances, seen as the distinctive elements of the “complexity” triangle in Figure 2 [146].



**Figure 2.** The “Complexity Triangle” in Land Degradation Issue.

This statement recalls the importance of differentiated policies oriented toward a sustainable local development to combat desertification based on territorial specificities. Therefore, two target cases can be identified: (i) highly vulnerable territories, converging over time, in disadvantaged economic conditions; (ii) territories that are only moderately vulnerable, with divergent and highly polarized degradation within them, subject to climatic conditions which are gradually drying, while being in relatively favorable socioeconomic contexts. Despite the recognized need to adopt policies to mitigate degradation processes, unfortunately only the areas belonging to the first group have been considered so far, while in the face of climate change and the global economic crisis, both target cases should be considered [147]. While intervening massively to restore already degraded land, with the goal to halt the desertification process, local systems should rapidly enforce land protection measures targeting socioeconomic contexts only moderately vulnerable to land degradation, preparing for new challenges and building resilience to global change [148]. Based on these considerations, relevant issues to take into account to support an effective sustainable development strategy containing land degradation are (i) the development of multiscale land-use scenarios, (ii) the use of such scenarios in quantitative methodologies monitoring land sensitivity to degradation over time, (iii) the multiscale analysis of the results of past policies, and (iv) the identification of the costs and benefits of mitigation measures through appropriate socioeconomic models [149]. Being able to improve a set of monitoring indicators

and methodologies for policy analysis is a further requirement to ensure the effectiveness of mitigation and adaptation strategies.

**Author Contributions:** Conceptualization, L.S. and D.S.; Methodology, G.Q. and R.S.; Formal Analysis, A.G.-M. and R.H.-C.-Z.; Investigation, G.Q. and R.S.; Resources, R.H.-C.-Z. and A.G.-M.; Writing—Original Draft Preparation, L.S. and G.Q.; Writing—Review and Editing, D.S., and R.S.; Visualization, A.G.-M.; Supervision, R.H.-C.-Z.; Project Administration, R.H.-C.-Z. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding

**Conflicts of Interest:** The authors declare no conflict of interest.

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