

## Article

# Landscape Strategies for Terraced Landscapes in the European Alpine Region Using a Mixed-Method Analysis Tool

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**Abstract:** Terraced landscapes are anthropic landscapes that need continuous management. Future planning policies need to develop bottom-up approaches in order to be able to take into consideration the perspectives of decision makers (DMs) and civil society stakeholders (CSs). Using a participatory mixed-method approach, this research work identified and prioritized the strengths, weaknesses, opportunities, and threats (SWOT analysis) perceived as key factors for setting future landscape strategies. The aims were (i) to develop a methodological framework for the enhancement of the terraced landscapes using a bottom-up approach, (ii) to identify and rank the favorable and unfavorable factors affecting their management in the European Alpine Region, and (iii) to develop alternative and future landscape strategies. The methodology was applied in nine Italian and Swiss cross-border terraced landscapes. An online focus group was organized together with a decision maker from each study area in order to identify the SWOT items for their enhancement. Subsequently, a focus group for each study area was organized with civil society stakeholders. They prioritized the SWOT items based on the local context and territorial issues using a cumulative voting method. The results were normalized, and these allowed for the development of local and supralocal landscape strategies that were both common to the cross-border terraced landscapes and specific to the main land uses characterizing them.

**Keywords:** UNESCO cultural landscape; agricultural systems; bottom-up approach; focus group technique; landscape planning; historical rural landscape



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## 1. Introduction

### 1.1. Values and Threats of Terraced Landscapes

Terraced landscapes are distinctive landscapes made by humans, traditionally built to obtain land for cultivation on steep slopes [1]. They are the consequence of an uninterrupted and adaptive land re-arrangement in terms of use and spatial structure that responds to ever-changing economic and social needs [2]. Terraced landscapes are the results of the coevolution of different features, which mainly comprise physical, historical, anthropic, and socioeconomic dynamics [3]. These sites are complex systems principally recognized for the distinctive architectural and historical features, agricultural systems, cultivation practices, productions, and cultivation techniques that have been applied to them. Indeed, terraces are mainly constructed with dry-stone walls, which are recognized as having important social, environmental, and ecological value [4]. For these reasons, in 2018, the United Nations Educational, Scientific and Cultural Organization (UNESCO) recognized the “art of dry-stone walling knowledge and techniques” as an Intangible Cultural Heritage of Humanity in eight European countries, including Italy and Switzerland [5].

Terraces provide several ecosystem services such as runoff reduction, water conservation, erosion control, soil conservation, an increase in soil quality, carbon sequestration, enhancement of biodiversity, and enhancement of soil fertility [6,7]. In this context, the

recognition of the environmental and societal benefits provided by the terraced landscapes in terms of ecosystem services provision has allowed for the development of landscape plans and projects at an international level [8].

However, terraced landscapes require continuous and active management by farmers, which is often expensive and tiring [9]. This is one of the causes of their abandonment. The lack of management consequently brings about the loss of historical landscapes and serious risks to public safety. Indeed, the abandonment of terraces would increase the hydrogeological risk [10]. Efficient management strategies and preservation policies for terraced landscapes are therefore becoming increasingly important. For example, Ažman Momirski [11] highlighted the need to increase the planning strategies for the enhancement of Slovenian terraced landscapes.

In Europe, the importance of studying and enhancing terraced systems is so well known that specific research projects have been dedicated to them since the beginning of this century. For example, in 2005, the European Union financed an Interreg project called ALPTER, aimed at mapping terraced areas, evaluating risks related to the abandonment of terraces, enhancing agricultural products, and promoting experiential tourism [12]. More recently (2019–2022), another European project was dedicated to the enhancement of the terraced landscapes. It was called “InTERRACED-NET: Integrated strategies and networks for the conservation and enhancement of the transboundary terraced landscape”. The general aim of the project was to carry out a participative characterization of the cross-border terraced landscapes in order to develop landscape strategies for their conservation and enhancement [13]. These strategies were put together in an action plan for the integrated and sustainable enhancement of the involved terraced landscapes. The specific objectives of the action plan were the implementation of the following:

- (A) Innovative forms of public–private cooperation;
- (B) Territorial marketing and certification strategies;
- (C) Strategies to increase ecosystem services and biodiversity;
- (D) Actions to enhance agricultural and niche local productions.

### *1.2. Participatory Approaches and Methods for the Development of Landscape Strategies*

From a methodological point of view, there is a rise in international awareness with regard to the need to read and examine the landscape and its natural, cultural, and perceptible components [14]. Following the European Landscape Convention [15] recommendations concerning the need to consider people’s perception in living landscape planning, public consultation has become an increasingly important tool in the decision-making process [16]. The participatory approach allows for an understanding of the perspectives and problems of decision makers and civil society stakeholders and for the identification of sustainable strategies for historical rural sites [17]. According to Gkoltsiou and Mougiakou [18], to ensure the sustainability of terraced landscapes, it is essential to support territorial management choices that apply qualitative assessment tools and involve local stakeholders. Pomatto et al. [19] highlighted the importance of the involvement of rural communities in defining landscape strategies for the enhancement of terraced landscapes.

Strengths, weaknesses, opportunities, and threats (SWOT) analysis is a well-known strategic planning technique suitable for application using top-down (expert-based) or bottom-up (participatory) approaches [20,21]. It provides a framework for identifying policy goals and, furthermore, for defining the strategies that would aid in their achievement [22]. The main limitations of the method are that its items are listed as if all were equally important and the fact that they are not related to each other [23]. To go beyond the qualitative examination of the SWOT items, the analysis can be integrated with quantitative techniques that are aimed at prioritizing the SWOT items and generating strategies based on the relationships among them. Usually, such mixed methods integrate the SWOT analysis with analytic hierarchy processes (AHPs) [24–27], analytic network processes (ANPs) [28,29], and other multicriteria decision-making methods (MCDMs), including those using fuzzy set theory to deal with uncertainty due to unquantifiable, incomplete, or

unobtainable information [30,31]. Novelli et al. [32] investigated an easy-to-apply mixed method to weight and rank SWOT items that were to be used with non-expert evaluators. However, as with other more complex methods, such as AHPs and ANPs, hybrid approaches are based on the pairwise comparison of SWOT items two at a time. All techniques based on pairwise comparisons are time-consuming, difficult to handle, and require a high level of cognitive effort from the evaluators [33,34]. This affects the quality of the outcomes, and the practicability and validity of the approach are both reduced when the number of SWOT items is high and the evaluators are non-experts [32,35]. In order to prioritize the SWOT items using an easy-to-apply participatory approach without reducing the number of items included in the analysis, we experimented with a cumulative voting method, a simple and user-friendly method that prioritizes a list of items on a ratio scale [36].

### 1.3. Research Aim

This research work sought to develop an expert-based assessment of the cross-border Italian and Swiss terraced landscapes and their characterization through the use of a participative approach. In this paper, we will focus on the bottom-up approach. We involved both the decision makers (DMs) and civil society stakeholders (CSs) of local communities to examine the study areas and identify sustainable landscape management strategies. Operatively, we used a mixed method, combining the strengths, weaknesses, opportunities, and threats (SWOT) analysis with a cumulative voting method.

The aims of the research were as follows: (i) to develop a methodological framework for the enhancement of the terraced landscapes using a bottom-up approach, (ii) to identify and rank the favorable and unfavorable factors affecting terraced landscape management in the European Alpine Region, and (iii) to develop alternative and future landscape strategies based on the insights gained from the analysis.

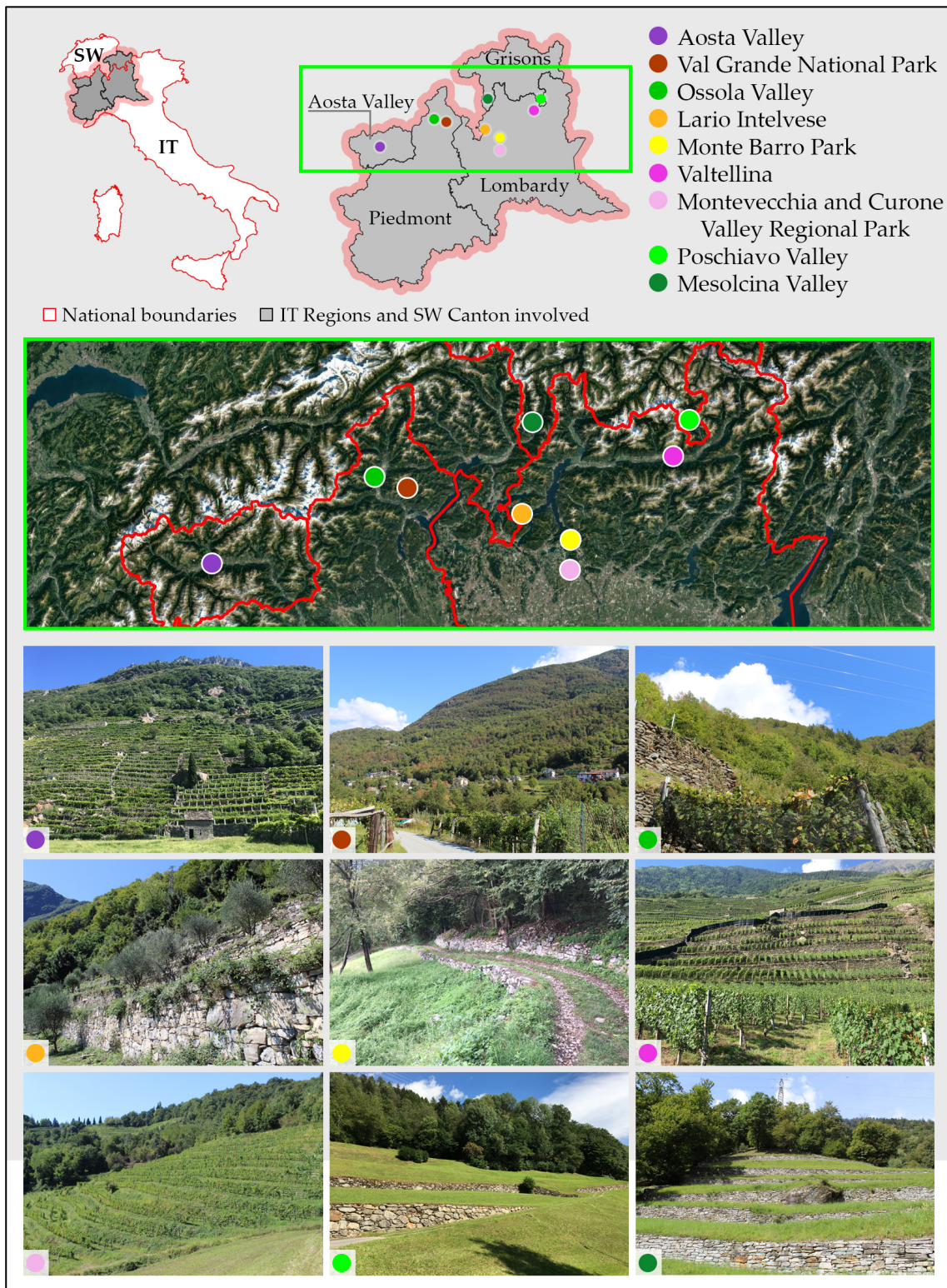
Given the importance of local understanding in facilitating the effective management of terraced landscapes, this paper draws upon participatory fieldwork in the European Alpine Region, particularly in Italy and Switzerland.

## 2. Materials and Methods

### 2.1. The Study Areas

The methodology was applied in the territories involved in the InTERRACED-NET European Project: Aosta Valley Region (Italy); Val Grande National Park, Ossola Valley (Piedmont Region, Italy); Lario Intelvese, Monte Barro Park, Valtellina, Montevecchia and Curone Valley Regional Park (Lombardy Region, Italy); Poschiavo Valley, Mesolcina Valley (canton of Grisons, Switzerland). Figure 1 shows the nine cross-border Italian and Swiss territories considered as study areas. All of them are characterized by terraced landscapes and belong to the Northwest Alpine Arch.

These areas are characterized by different landscape features and types of boundaries (i.e., administrative boundaries such as regions and parks, or geographical boundaries such as valleys). However, in all of them, there are extended terraced landscapes characterized by different states of conservation and different land uses. Historically, such terraces were dedicated to agricultural activity. The most intensive cultivations on terraces characterize the Aosta Valley Region and Valtellina, where viticulture plays a fundamental role. Less intensive viticulture can also be found in the Montevecchia and Curone Valley Regional Park. The two Swiss study areas both consist of terraces dedicated to meadows. Agroforestry was historically carried out in Lario Intelvese. Meanwhile, the terraces of the Ossola Valley, Val Grande National Park, and Monte Barro Park, which were once dedicated to viticulture, are nowadays threatened by abandonment. Some residual vineyards remain in the first two, while in Monte Barro, they have completely disappeared. The agriculture carried out in all of the study areas is considered “heroic” since cultivation on terraces requires big efforts and needs continuous human management [37]. Table 1 synthesizes the current main land uses of the terraces in the study areas.



**Figure 1.** The nine cross-border Italian and Swiss terraced landscapes considered as study areas belonging to the Northwest Alpine Arch. These include the regions of Aosta Valley, Piedmont, and Lombardy in Italy and the canton of Grisons in Switzerland.

**Table 1.** Main territorial characteristics of the nine study areas considered.

Study Areas	Types of Boundaries	IT Regions SW Canton	Main Land Use of Terraces
Aosta Valley	Region	Aosta Valley	Vineyard
Val Grande National Park	National park	Piedmont	Agroforestry
Ossola Valley	Protected area	Piedmont	Agroforestry
Lario Intelvese	Valley	Lombardy	Agroforestry
Monte Barro Park	Natural park	Lombardy	Agroforestry
Valtellina	Valley	Lombardy	Vineyard
Montevecchia and Curone Valley Regional Park	Regional park	Lombardy	Vineyard
Poschiavo Valley	Valley	Grisons	Meadows
Mesolcina Valley	Valley	Grisons	Meadows

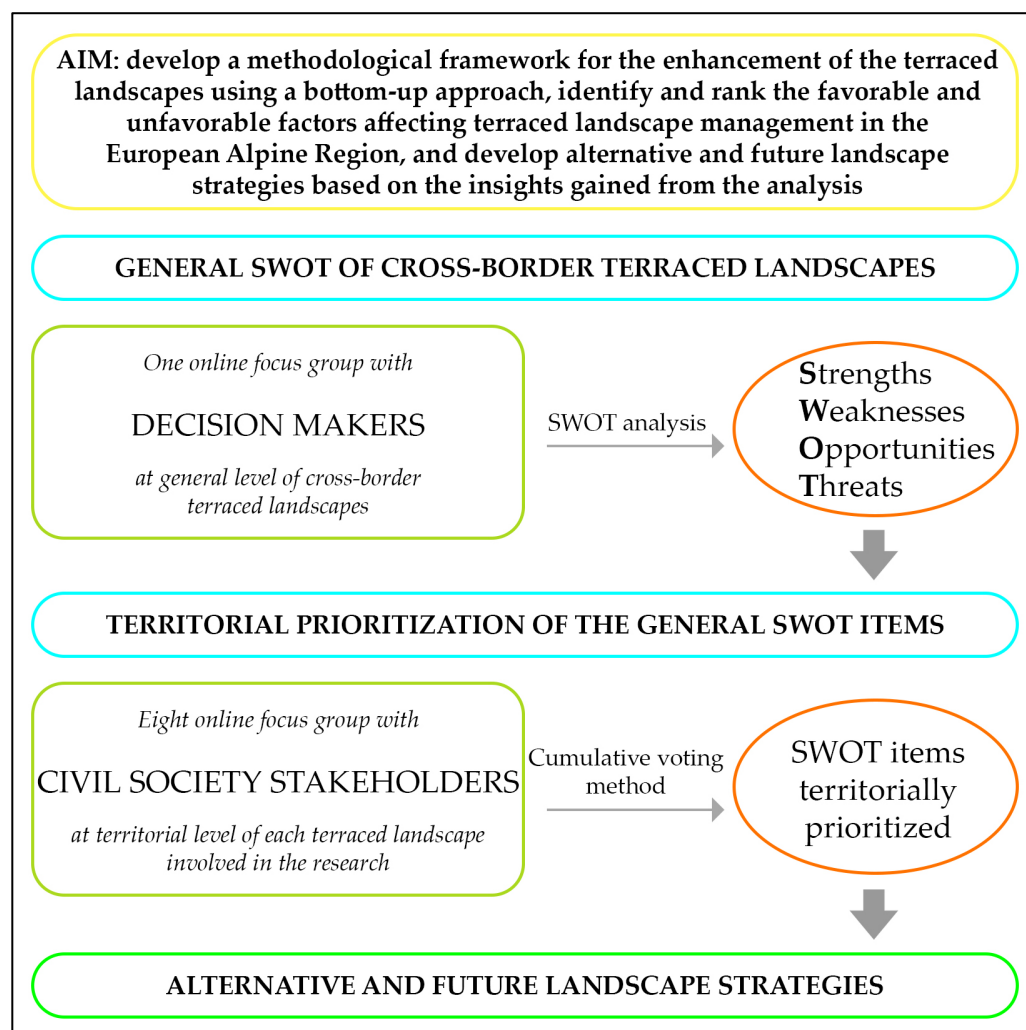
## 2.2. Methodological Framework

We used the focus group technique to involve DMs and CSs in the planning process. Spennemann [38], who involved different participants in working groups, examined group dynamics, in particular an individual's position and their relationship and interactions with others in a group. In our research, we decided to involve different types of actors belonging to various organizations, administrative levels, and networks, who were hence guided by different concepts, tasks, and opinions as well as by different rules. Each focus group included a sequence of interactions that considered the roles of each type of stakeholder. According to Pinto-Correia et al. [39], DMs and CSs were involved separately in order not to be influenced by each other. DMs were involved in the first step of our study to define the general SWOT analysis of cross-border terraced landscapes. CSs were involved in the second step to territorially evaluate and prioritize the general SWOT items. In order to avoid biased responses, experts should also fulfill the condition of having neither present nor past political or administrative responsibility in the study areas investigated, as well as not having any conflict of interest and obvious personal relationships, thus we decided to guide the participatory processes as experts and moderators [40]. Moreover, in order to avoid the CS participants being influenced, the general SWOT analysis of cross-border terraced landscapes was presented anonymously without indicating the names and the roles of the DMs involved in the first step.

To achieve the aims of this research, we set up nine focus group discussions (one with DMs and eight with CSs). As a result of the limitations imposed by COVID-19, all of them were performed remotely, using the platform Cisco Webex Meetings. Focus group discussions were recorded and transcribed for subsequent analysis [41]. All the focus group discussions were conducted in the Italian language since it is the language spoken both in Italy and in the Swiss canton involved. Indeed, all the DM and CS participants were Italian speakers.

The data and information collected through the focus group discussions are not sensitive, and there is no possibility for participants to be identified. Moreover, personal data (name, date of birth, gender, etc.) were not collected, and personal opinions on the research topics were treated in an aggregated form. All the participants were informed about the aims of the research and consented to the use of the results from the focus group discussions in an aggregated and anonymous form.

As shown in Figure 2, the research was divided into two parts. The first one focused on the DMs' identification of the items of the SWOT matrix at the general level for the cross-border Italian and Swiss terraced landscapes. Indeed, they were involved as supralocal experts with visions and perspectives at the European Alpine Region level.



**Figure 2.** Methodological framework.

During the second part of the research, the SWOT items were firstly discussed and validated by the CSs. They were involved as local experts with specific visions and perspectives strongly linked with their terraced landscapes. Subsequently, the items of the general SWOT were prioritized at the territorial level by the CSs using the cumulative voting method.

The results allowed us to propose alternative and future landscape strategies for the enhancement of the terraced landscapes, starting from the perceptions of the local communities.

### 2.3. General SWOT Analysis of Cross-Border Terraced Landscapes

Firstly, all partners of the InTERRACED-NET European Project were involved to define a general framework of core opportunities and constraints for the conservation and enhancement of the cross-border Italian and Swiss terraced landscapes. An online focus group was organized in December 2020. Each partner assigned a decision maker of their organization as a participant. During the meeting, we described the aims of the project and the features of the study areas, and we explained the SWOT methodology. Then, the nine DMs were asked to discuss one key research question: “Based on your experience, which are the strengths, weaknesses, opportunities, and threats in the enhancement of the terraced landscapes?” The DMs discussed each section of the SWOT matrix, suggesting a general list of shared strengths, weaknesses, opportunities, and threats for the cross-border Italian and Swiss terraced landscapes. In particular, strengths and weaknesses were analyzed as internal factors that the DMs have some control over and can try to change or

manage. Opportunities and threats were considered as external factors, derived from the environment, market, or regulations outside local-actor control [42]. Finally, the DMs were asked to associate each item of the general SWOT matrix with one or more objectives of the action plan of the InTERRACED-NET European Project (A, B, C, D).

#### 2.4. Territorial Prioritization of the General SWOT Items Using the Cumulative Voting Method

Secondly, we organized and coordinated eight territorial online focus groups (from February to March 2021). For each territory involved in the research, CSs were asked to discuss and validate the results of the general SWOT analysis of the cross-border Italian and Swiss terraced landscapes. Then, they were asked to prioritize the SWOT items based on the local context and territorial issues. We organized eight focus group discussions with CSs because Poschiavo Valley and Mesolcina Valley (canton of Grisons, Switzerland) were similar in terms of landscape, economy, and social structure. In these two Swiss areas, the terraces were mainly used as meadows, and they had common values and threats, as well as similar management tools for the terraced landscapes. Based on the studies by Gullino et al. [17] and Duncan et al. [43], CSs were recruited as local actors characterized by different concepts, tasks, opinions, and roles related to the terraced landscapes. Each partner identified a panel of local CSs ( $n = 8\text{--}14$ ) according to these indications. During the territorial focus groups, only the CSs were asked to participate in order not to be influenced by the presence of the DMs. Table 2 presents a list of the CSs involved (type and number) in the eight territorial focus groups.

**Table 2.** Type and number of CSs involved in each territorial focus group.

Type of Stakeholder <sup>1</sup>	Number of CS Participants							
	Aosta Valley Region (IT)	Val Grande National Park (IT)	Ossola Valley (IT)	Lario Intelvese (IT)	Monte Barro Park (IT)	Valtellina (IT)	Montevecchia and Curone Valley Regional Park (IT)	Poschiavo Valley and Mesolcina Valley (SW)
A		4	3	1	3	2	2	3
B				3	3			1
C	2		1	1			1	
D		1	1	1	1	1	1	
E	1	2	2	2	1	2	1	1
F		2			3		2	2
G	2		3		1	2	1	2
H	3	1			1	3	1	1
I					1			
<b>TOTAL</b>	<b>8</b>	<b>10</b>	<b>10</b>	<b>8</b>	<b>14</b>	<b>10</b>	<b>10</b>	<b>10</b>

<sup>1</sup> A = Environment/social association; B = Farmer; C = Freelance professional; D = Forestry/agronomy; E = Municipality organization; F = Protected area organization; G = Tourism/hotelier; H = Wine grower/wine producer; I = Other local organization.

With the aim of comparing the results and defining a SWOT matrix at the territorial level that responds to the management/conservation objectives of the terraced landscapes, all territorial focus groups were performed with the same operating methods. According to the studies by Morris et al. [44] and Larcher et al. [45], each focus group separately followed the same steps to avoid influencing each other. In these focus groups, we used cumulative voting as the methodology for prioritizing the items. The participants of each focus group prioritized the items of the general SWOT of cross-border terraced landscapes in order by giving them a score. According to Cagliari et al. [46], the number of dots ( $N$ ) which they had available for each section of the SWOT matrix was defined based on the number of CSs participating in the focus group ( $P$ ) and the number of items in the section ( $T$ ). This

method allowed us to adapt the number of dots to the context of evaluation with the use of the following formula:

$$N = \frac{\left(\frac{T}{2}\right) \times T}{P}$$

Table 3 reports the number of dots available for each territorial focus group.

**Table 3.** Number of available dots for each section of the general SWOT analysis.

Territorial Focus Groups	Number of Available Dots for Each Section of the General SWOT Analysis			
	Strengths	Weaknesses	Opportunities	Threats
Aosta Valley Region (IT)	4	2	3	2
Val Grande National Park (IT)	3	1	2	1
Ossola Valley (IT)	3	1	2	1
Lario Intelvese (IT)				
Monte Barro Park (IT)	2	1	2	1
Valtellina (IT)	3	1	2	1
Montevecchia and Curone				
Valley Regional Park (IT)	3	1	2	1
Poschiavo Valley and				
Mesolcina Valley (SW)	3	1	2	1

Each CS could decide to assign all the available dots to a single item or to distribute the available dots among several items, with more dots collected by a single item indicating its higher priority. Table 4 presents the questions given to civil society stakeholders for each section of the SWOT matrix.

**Table 4.** Questions proposed to civil society stakeholders (CSs) during the territorial focus group.

Sections of the SWOT	Questions Proposed to CSs
Strengths	Referring to your specific territory, we ask you to use your available dots to indicate which of these strengths you would primarily respond to with policies, actions, and financings meant for the enhancement of the terraced landscape. Your strategy can be aimed at reinforcing the lacking strengths or at investing more in strengths already acquired.
Weaknesses	Referring to your specific territory, we ask you to use your available dots to indicate which of these weaknesses you would primarily respond to with policies, actions, and financings meant for the enhancement of the terraced landscape. Your strategy can be aimed at resolving the weakest weaknesses or the more immediate ones.
Opportunities	Referring to your specific territory, we ask you to use your available dots to indicate which of these opportunities you would primarily respond to with policies, actions, and financings meant for the enhancement of the terraced landscape.
Threats	Referring to your specific territory, we ask you to use your available dots to indicate which of these threats you would primarily respond to with policies, actions, and financings meant for the enhancement of the terraced landscape.

After we explained the methodology, a link to the Google Form for each section of the SWOT was sent through the chat function of the platform used for the online meeting; the form contained the items and the possibility to assign the available dots to them. Indeed, the importance of the anonymity of voting is recognized in the literature as it prevents the respondent from being influenced by the answers provided by others [47,48]. Based on the study by Van Erkel and Thijssen [49], the order of the items proposed was randomized in



order to avoid the primacy effect, wherein respondents could remember better and prefer the firsts items on the list. In cumulative voting methods, the randomized order of the elements to be voted on is essential for the achievement of significant results [36]. At the end of voting, the results were discussed by the participants. The discussion allowed us to evaluate together with the CSs the actions and landscape strategies for the enhancement of the terraced landscapes.

Subsequently, the data collected were further processed; these were normalized in order to make all of the data comparable. Indeed, as we discussed above, the number of dots available to the CSs of the different focus groups was influenced by the number of participants. We thus used the min–max normalization technique [50]:

$$\text{Normalized}(e_i) = \frac{e_i - E_{\min}}{E_{\max} - E_{\min}}$$

where:

- $E_{\min}$  is the minimum value for variable  $E$ ;
- $E_{\max}$  is the maximum value for variable  $E$ ;
- The normalized value of  $e_i$  is from 0 to 1.

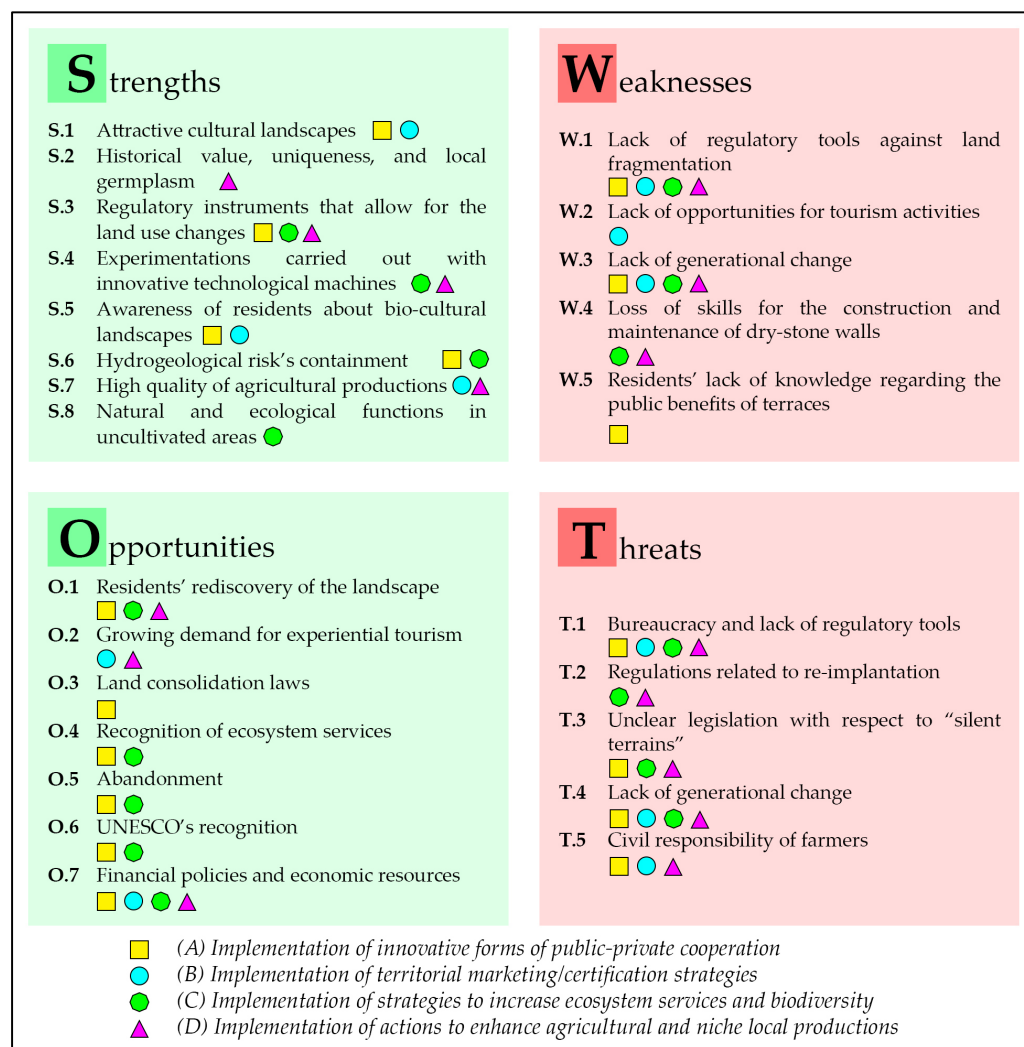
Finally, based on the study by Gkoltsiou and Paraskevopoulou [51], we decided to present the results by grouping the study areas according to the current main land uses of their terraced landscapes (vineyards, agroforestry, and meadows). We displayed these data graphically.

### 3. Results

#### 3.1. General SWOT Analysis of Cross-Border Terraced Landscapes

In the first focus group, nine DMs participated. After a discussion that we coordinated, they identified general strengths, weaknesses, opportunities, and threats for the enhancement of the cross-border Italian and Swiss terraced landscapes. Subsequently, we asked them to relate the items identified to the objectives of the action plan of the InTERRACED-NET European Project. Figure 3 presents the results of the focus group, with the items of the general SWOT analysis of the cross-border terraced landscapes and their association with the objectives of the action plan.

As shown in Figure 3, in relation to the enhancement of the cross-border terraced landscapes, the DMs identified eight strengths, five weaknesses, seven opportunities, and five threats. In particular, they identified as strengths the attractive cultural landscapes (S.1); the historical value, uniqueness, and local germplasm (S.2); the regulatory instruments that allow for the land use changes (S.3); the experimentations carried out with innovative technological machines (S.4); the awareness of residents about bio-cultural landscapes (S.5); the hydrogeological risk containment (S.6); the high quality of agricultural productions (S.7); and the natural and ecological functions in uncultivated areas (S.8). Meanwhile, as weaknesses, they highlighted the lack of regulatory tools against land fragmentation (W.1), the lack of opportunities for tourism activities (W.2), the lack of generational change (W.3), the loss of skills for the construction and maintenance of dry-stone walls (W.4), and the residents' lack of knowledge regarding the public benefits of terraces (W.5). Among the opportunities, the DMs reported the residents' rediscovery of the landscape (O.1), the growing demand for experiential tourism (O.2), land consolidation laws (O.3), the recognition of ecosystem services (O.4), abandonment (O.5), UNESCO's recognition (O.6), and financial policies and economic resources (O.7). Finally, the threats that emerged during the focus group were bureaucracy and the lack of regulatory tools (T.1), regulations related to re-implantation (T.2), unclear legislation with respect to "silent terrains" (T.3), the lack of generational change (T.4), and the civil responsibility of farmers (T.5).



**Figure 3.** The strengths, weaknesses, opportunities, and threats (SWOT) identified by the DMs in relation to the enhancement of the cross-border Italian and Swiss terraced landscapes. Each item of the SWOT was associated by the DMs with one or more objectives of the action plan of the InTERRACED-NET European Project (A, B, C, D).

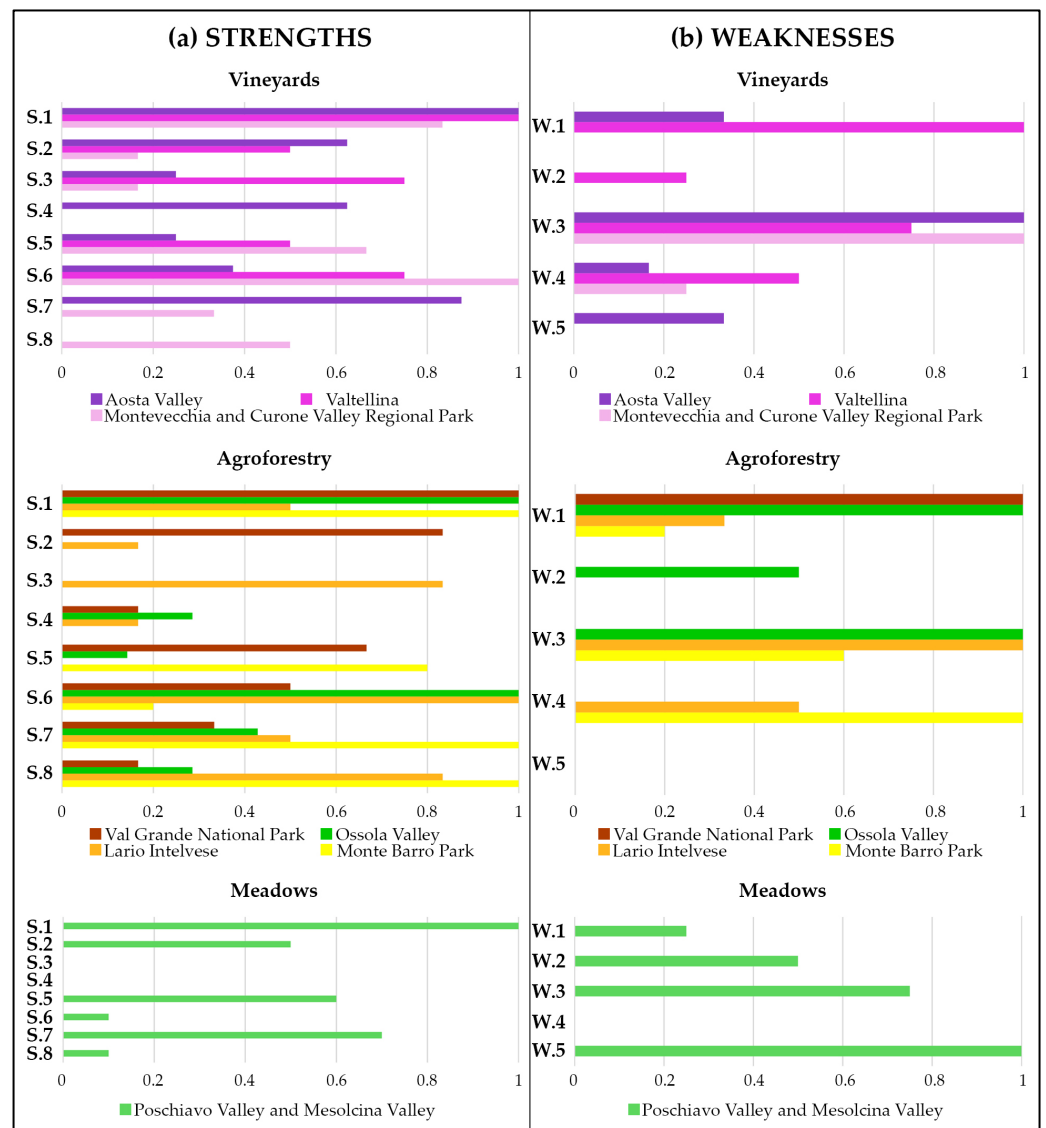
One or more of the objectives of the InTERRACED-NET European Project's action plan were associated by the DMs with each of the items. The most cited was the implementation of innovative forms of public-private cooperation (A), which was associated with seventeen items, followed by the implementation of strategies to increase ecosystem services and biodiversity (C) and the implementation of actions to enhance agricultural and niche local productions (D), both associated with fifteen items. Finally, the implementation of territorial marketing/certification strategies (B) was associated with eleven items. The description of the items of the general SWOT analysis identified by the decision makers is presented in the Electronic Supplementary Materials, Table S1.

### 3.2. Territorial Prioritization of the General SWOT Items with the Cumulative Voting Method

During the preliminary discussion for the validation of the general SWOT items, in all eight focus groups, no elements were added by the CSs and the general SWOT analysis was validated. The results of the territorial prioritization of the general SWOT analysis using the cumulative voting method allowed us to identify the common and specific strengths, weaknesses, opportunities, and threats. They also highlighted that among the different cross-border Italian and Swiss terraced landscapes, there are differences and similarities.

Indeed, we observed that some SWOT items identified by the DMs were perceived as a priority by all of the CSs, while the others were influenced by the current main land use that characterizes the study area.

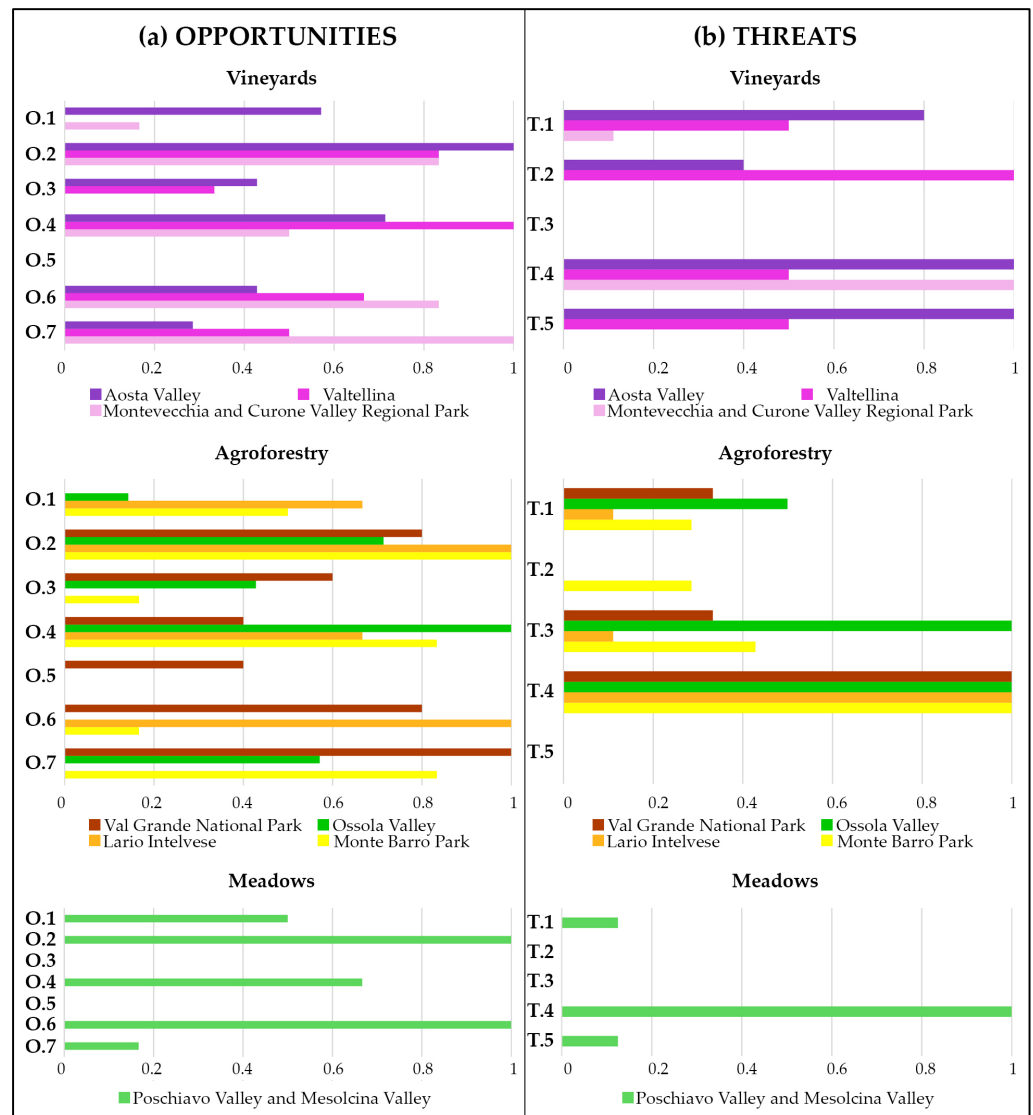
Indeed, as shown in Figure 4a, the attractive cultural landscapes (S.1) were considered to be the most significant strength of all terraced landscapes. Similarly, the high quality of agricultural productions (S.7) was reported as a priority in most of the terraced landscapes considered, independently of the land use that characterized them. The hydrogeological risk containment (S.6) was mainly perceived as having significant strength by the CSs who deal with vineyard and agroforestry terraced landscapes. By contrast, for meadow terraced landscapes, the regulatory instruments that allow for land use changes (S.3) and the experimentations carried out with innovative technological machines (S.4) were not considered as priority strengths. Finally, the natural and ecological functions in uncultivated areas (S.8) emerged mainly for agroforestry terraced landscapes, particularly for Monte Barro Park and Lario Intelvесе.



**Figure 4.** The results of the territorial prioritization of the general SWOT analyses with the use of the cumulative voting method, grouped according to the current main land uses characterizing the study areas. (a) strengths, and (b) weaknesses.

Regarding the weaknesses (Figure 4b), the lack of generational change (W.3) was considered as a priority weakness to be solved for almost all terraced landscapes, whereas the lack of regulatory tools against land fragmentation (W.1) emerged mainly for vineyard and agroforestry terraced landscapes. By contrast, the residents’ lack of knowledge regarding the public benefits of terraces (W.5) was the most important weakness for meadow terraced landscapes. The loss of skills for the construction and maintenance of dry-stone walls (W.4) emerged as priority for the agroforestry terraced landscapes, particularly in Monte Barro Park, while it was not reported by the CSs for meadows.

Figure 5a shows that the growing demand for experiential tourism (O.2) and the recognition of ecosystem services (O.4) are considered to be priority opportunities for further improvement by all CSs, independently of the land uses characterizing their terraced landscapes. Likewise, UNESCO’s recognition (O.6) is considered important by most of the CSs involved, independently of the land uses. By contrast, financial policies and economic resources (O.7) are opportunities mainly considered for vineyard and agroforestry terraced landscapes.



**Figure 5.** The results of the territorial prioritization of the general SWOT analyses with the use of the cumulative voting method, grouped according to the current main land uses characterizing the study areas. (a) opportunities, and (b) threats.

Finally, as shown in Figure 5b, the lack of generational change (T.4) is considered to be the most significant threat to all terraced landscapes. Meanwhile, bureaucracy and the lack of regulatory tools (T.1) are priority threats mainly for vineyards. For agroforestry terraced landscapes, the unclear legislation with respect to “silent terrains” (T.3) is considered a threat; this is not the case for the others. Similarly, the regulations related to re-implantation (T.2) and the civil responsibility of farmers (T.5) are priority threats to be solved specifically for terraced landscapes characterized by vineyards.

#### 4. Discussion

This research work developed an innovative bottom-up approach that involved the rural communities in the decision-making processes in relation to planning for terraced landscapes in the European Alpine Region. It is a challenge that has been reported by many authors at the international level. Indeed, according to Gullino et al. [52], in order to enhance rural landscapes, it is imperative to ensure dynamic sustainability through the definition of an integrated participatory planning approach. In this context, and in agreement with Kerebel et al. [53], using multilevel groups of stakeholders is a primary step. Fusco Girard et al. [54] underlined that the regeneration of the terraced landscapes has to induce the implementation of circular processes consisting of local actors. Similarly, Zoumides et al. [55] shared the importance of the involvement of the rural communities when starting participatory projects aimed at terrace rehabilitation. They reported that, in Cyprus, the stakeholders showed a high awareness of the multiple values of the terraced landscapes and that they were involved in participatory soil-conservation activities (i.e., dry-stone wall reconstruction). The authors underlined that their involvement, especially of younger local actors, is a critical starting point in ensuring the transferability of knowledge and the enhancement of the terraced landscapes. This is in line with what emerged in the SWOT analyses, which were performed by decision makers belonging to the involved study areas. Indeed, the DMs identified as strengths the cultural and the environmental benefits of the terraced landscapes and the residents’ awareness of them. By contrast, the decision makers underlined that the terraced landscapes identified as study areas are affected by the lack of generational change. They reported it as both a weakness and a threat. Indeed, the DMs highlighted that it is influenced by internal factors (social conditions) and external factors (supralocal economic support and policies). This is in line with the findings of many authors that recognize the lack of generational change as one of the causes of the abandonment of the terraces [56,57]. However, the growing demand for experiential tourism was identified by the decision makers as an important opportunity for the enhancement of the terraced landscapes. According to Tian et al. [58], tourism can contribute to the agricultural development of the terraces if it becomes an integral part of the landscape. Furthermore, Terkenli et al. [59] highlighted that for the enhancement of the terraced systems, irresponsible mass tourism is not what is needed, but rather an extensive and aware kind of tourism that is interested in the multiple values of the landscape and its traditional products. To attract and manage this type of sustainable tourism, the authors reported the importance of professionally equipping, training, and improving the skills of the local communities and farmers. It is a need that also emerged in the study areas considered, since the lack of opportunities for tourism activities was reported as a weakness. Similarly, bureaucracy and the lack of a regulatory tool were reported by the DMs as both weaknesses and threats because they are influenced by local and supralocal policies. Santoro et al. [60] reported that the main problem evidenced by the farmers of the terraces of Cinque Terre (Italy) was the excessive bureaucracy. Shirvani Dastgerdi and Kheyroddin [61] highlighted that the resilience of the terraced cultural landscapes has to be improved with specific policies at the national level along with participatory approaches that involve local stakeholders. Their lack of knowledge regarding the public benefit of terraces emerged in our SWOT analysis as a weakness to be solved. At the same time, the DMs reported the loss of skills needed for the construction and maintenance of dry-stone walls, which was affecting the study areas. In this regard, the literature recognizes that the

recovery of traditional skills is critical for the enhancement of the terraced landscapes [62]. Gravagnuolo and Varotto [63] reported that, nowadays, this knowledge is mainly preserved by older farmers and is being lost. The authors highlighted that the presence of the “art of dry-stone walling knowledge and techniques” on the Representative List of the Intangible Cultural Heritage of Humanity of UNESCO is a strategic starting point for the recovery of the traditional skills needed for the management of dry-stone walls. Moreover, the decision makers involved in our research cited UNESCO’s recognition as an important opportunity to further the enhancement of the cross-border Italian and Swiss terraced landscapes.

Given the strengths, weaknesses, opportunities, and threats to the enhancement of the cross-border terraced landscapes identified by the decision makers, during the second part of our research, we asked the civil society stakeholders to prioritize them in relation to their specific territories. In order to develop the strategies, we took into consideration all four parts that make up the SWOT analysis. Indeed, the strengths and the opportunities required further improvement of the items at local and supralocal levels, respectively. Meanwhile, the weaknesses and the threats required the development of locally and supralocally specific policies. Furthermore, as described above (Table 4), for all parts of the SWOT, the CSs were asked to use their available dots to indicate which items they would primarily respond to with policies, actions, and financings. The methodology applied and the results achieved allowed us to capture the particular characteristics of the terraced landscapes considered. We observed similarities and differences between vineyard, agroforestry, and meadow terraced landscapes. Considering the results from the SWOT analysis carried out by the DMs and the prioritization of the items performed by the CSs, alternative and future landscape strategies for the enhancement of the terraced landscapes were identified. They were divided into strategies at the cross-border level and specific strategies for the different land uses (vineyards, agroforestry, meadows). Table S2 (reported in the Electronic Supplementary Material) synthesizes the strategies identified, considering the results from the SWOT analysis and the prioritization of its items.

As evidenced by the CSs, the attractive cultural landscapes (S.1), the high quality of agricultural productions (S.7), and the growing demand for experiential tourism (O.2) need to be further improved in all of the terraced landscapes involved, independently of their main land uses. In order to accomplish this, it is critical to develop measures for the conservation of the historical elements of the terraced landscapes at the local level, as they are the basis of their cultural attractiveness. Indeed, the implementation of municipal master plans was reported by Andresen and Curado [64] as the prime local land management instrument for the conservation and improvement of the terraced landscapes of Douro Valley (Portugal). According to Pomatto et al. [65], the permanence of the historical features of cultural terraced landscapes can be improved by making the maintenance of traditional agricultural practices and agricultural productions more attractive to farmers through economic support as compared to others who have no historical connection with the territories. Moreover, the high costs faced by farmers to maintain these poorly mechanizable systems can be rewarded through the market’s recognition of their products via certifications of quality [66]. For this reason, the importance of typical local products has to be recognized by developing new local certification marks (e.g., municipal designations of origin) and by further improving those that already exist (e.g., Denomination of Controlled Origin, Protected Geographical Indication). The growing demand for experiential tourism is an opportunity that requires the improvement of the touristic attractiveness of the terraces. Organizing touristic activities linked to attractive cultural landscapes and their high-quality agricultural productions is an important future strategy. As discussed above, it is also necessary to train the local tourism operators. Another critical strategy involves an improvement of the multifunctionality of the farms. Terkenli et al. [67] reported that in Valtellina, which is one of the study areas considered in our research, this strategy’s link to tourism is considered a priority. Finally, according to Pomatto et al. [19], in order to facilitate the dissemination of knowledge about these landscapes outside the systems, it is important to participate in enhancement programs at the supralocal level, both national

programs (e.g., National Register of Historical Rural Landscapes for Italy) and international ones (e.g., Globally Important Agricultural Heritage Systems—program of the Food and Agriculture Organization of the United Nations). Finally, the growing demand for experiential tourism needs to be supported at the supralocal level with specific funds and projects. However, to combat the lack of generational change (W.3, T.4), the first strategy would be to develop local policies that support young farmers in order to maintain cultivation on the terraces. Secondly, it is important to dedicate specific funds at the supralocal level in order to encourage young people to continue to cultivate the inherited terraces or to buy and recover the abandoned ones. Indeed, the unprofitable terraced cultivations, the difficulty of working on the terraces, and their difficult accessibility make the creation of specific policies necessary. In this context, financing for young farmers' income and programs and the creation of economic resources are ways of supporting future agricultural activity on the terraces. In addition, to maintain the cultivations over time and support the young farmers' activities, it is imperative to increase the local economy and to establish financial support for private farmers, above all the young ones. Furthermore, independently of the main land uses, the need to further improve the recognition of ecosystem services provided by the cross-border Italian and Swiss terraced landscapes also emerged (O.4). It is a challenge that has been recognized by many authors [68,69]. A useful strategy is to develop policies aimed at recognizing the important role of the terraced landscapes in ecosystem services provision at the supralocal level. Indeed, providing economic means to farmers in order to help them manage the terraces and improve their ecosystem services provision is critical. Finally, in all of the study areas, it is necessary to dedicate specific local and supralocal resources as well as develop common plans for the safeguarding and management of the dry-stone walls in order to take the opportunity of UNESCO's recognition (O.6).

Regarding vineyards on terraced landscapes, there was a need to create some specific strategies (Table S2). The first ones are aimed at dealing with bureaucracy and the lack of regulatory tools at the supralocal level (T.1). It is in line with the literature, which recognizes that excessive bureaucracy is often a disincentive for farmers [70]. A good strategy is to simplify the bureaucracy involved in the management of vineyards on terraced landscapes at the supralocal level. Moreover, it is critical to facilitate land consolidation and to simplify the bureaucracy related to property transfers and the recovery of abandoned terraces, especially for young farmers. Another strategy for vineyards on terraced landscapes is aimed at reviewing the regulations related to the re-implantation of vineyards on terraces at the supralocal level (T.2). Allowing the winegrowers to recover the abandoned vineyards and to plant vines without legislative obstructions is imperative. Indeed, the national legislation in Italy establishes that before planting a new vineyard, the winegrower must obtain an authorization, which is only granted for a maximum amount of hectares, defined at the national level every year [71]. It is clear that in terraced contexts, where the recovery of abandoned surfaces is a priority, these limitations are damaging. Finally, a threat to be solved, especially in vineyards on terraces, is the civil responsibility of farmers for accidents that can occur during touristic activities (T.5). This makes it necessary to develop clear legislation with respect to the topic at the supralocal level, one that would relieve farmers of the responsibility. Indeed, the literature recognizes that vineyards on terraced landscapes are particularly appreciated by tourists [72]. However, the civil responsibility for accidents makes the winegrowers quite anxious about opening up their terraces to touristic activities.

In agroforestry terraced landscapes, it has been evidenced that the main needs are related to the development of strategies aimed at avoiding the further abandonment of terraces and the loss of their multiple values (Table S2). Firstly, it is necessary to further improve the natural and ecological functions in uncultivated areas (S.8). A good strategy could be to manage these contexts at the local level in order to avoid the expansion of invasive species and the obstruction of the drainage system of the dry-stone walls. In accordance with this, in contexts often characterized by abandonment, the necessity to prevent the loss of skills for the construction and maintenance of dry-stone walls also emerged (W.4). Therefore, it is necessary to develop the transferability of knowledge with

regard to the construction and maintenance of the dry-stone walls to the new generations. With this aim, it is useful to organize specific courses at the local level and to finance the training of professional figures who are capable of managing the agroforestry terraced systems. Finally, the unclear legislation with respect to “silent terrains” (T.3) is a dangerous threat in contexts particularly affected by the abandonment of the cultivations. Indeed, the presence of abandoned lands, where the owners have either died or are not recognized, constitutes a big problem for the entire terraced system. This makes it critical to develop specific legislation regarding the management of “silent terrains” at the supralocal level that would allow for their recovery with productive purposes. In 2016, the Italian Piedmont Region created legislation on this topic, which promotes the formation of “land associations” (Regional Law nr. 21, 2 November 2016). Surprisingly, the civil society stakeholders of the two study areas belonging to this region (mostly Ossola Valley, but also Val Grande National Park) reported this threat as a priority to be solved. This result makes it clear that it is also necessary to improve the knowledge of the local communities on the existence of specific tools for “silent terrains” in the territories that can already take advantage of them.

The results of the territorial prioritization of the items of the general SWOT suggested that some priorities are common among the terraced landscapes characterized by vineyards and agroforestry. This is probably due to the strict connection between them, since in some study areas, agroforestry is the consequence of the abandonment of terraces once dedicated to viticulture. Firstly, as shown in Table S2, in these contexts, the further improvement of the hydrogeological risk containment (S.6) capability of terraces at the local level is a priority. Using a participatory spatial SWOT analysis, Gkoltsiou and Mougiakou [18] defined strategic plans and sustainable development strategies. For terraced hinterland areas, the authors identified guidelines involving the maintenance and restoration of the abandoned terraces and the conservation of traditional agricultural practices. Sakellariou et al. [73] underlined the importance of guaranteeing the preservation of this important function of the terraced landscapes, which would avoid causing structural damage to them. Therefore, it is necessary to develop specific projects of dry-stone wall management with the use of traditional techniques, above all in areas particularly critical for public safety (in proximity to infrastructures or inhabited centers). Other criticalities to be solved at the local level in vineyard and agroforestry terraced landscapes is the lack of regulatory tools against land fragmentation (W.1). To solve this weakness, it is necessary to develop policies at the local level that would facilitate land consolidation and stimulate the formation of networks between small and nearby farms on terraces dedicated to viticulture or agroforestry. Additionally, in this case, the CSs belonging to the study areas included in the Piedmont Region, which is equipped with the specific law cited above, underlined the need to further improve policies on this topic. It is therefore useful to improve the knowledge of the local communities on the existence of specific tools against land fragmentation in the territories that can already take advantage of them. Finally, it was evidenced that in vineyard and agroforestry terraced landscapes, it is necessary to take advantage of the opportunity provided by financial policies and economic resources at the supralocal level (O.7). Further improvement of the multifunctionality of these systems and their touristic potential and the development of specific financial policies and economic resources at the supralocal level for the enhancement of the terraced landscapes are good strategies.

To address the residents’ lack of knowledge regarding the public benefits of terraces in meadow terraced landscapes (W.5), we think that their involvement in the decision-making processes using participatory approaches is a fundamental strategy. For historical landscapes, this need was also outlined by Aimar et al. [74]. The authors expressed the importance of applying multidisciplinary studies that support the inclusion of participatory approaches. For these reasons and in these contexts, it is also useful to increase the awareness of residents with regard to the public benefits of terraces and to organize local meetings, workshops, and conferences on the topic (Table S2).



## 5. Conclusions

In this research, we analyzed and compared historical terraced landscapes in the European Alpine Region. We also analyzed the main strengths, weaknesses, opportunities, and threats perceived by focus group participants in relation to the enhancement of the cross-border Italian and Swiss terraced landscapes. The focus group participants (decision makers and civil society stakeholders) outlined the importance of managing and conserving the terraced structures by carrying out recovery and rural development projects locally, nationally, and internationally. The terraced study areas considered in this research work are characterized by distinctive architectural and historical features, agricultural systems, land uses, cultivation practices, productions, and traditional cultivation techniques. DMs and CSs believe that terraced systems play different roles and perform important functions. Indeed, they recognize the social, environmental, and ecological values of these structures. Nowadays, some of them continue to be managed, others are residually cultivated, while others still are strongly affected by abandonment processes.

We believe that effective planning for the management of terraced landscapes requires approaches that integrate the plurality of stakeholder values. In normal practice, the focus group technique involves a discussion between different types of actors and an expert facilitating the discussion, keeping the participants focused on the topic of interest. As evaluated by Reid and Reid [75], focus groups do have their drawbacks: in direct discussion, it is possible that some participants are influenced by the others, and their opinions can be positively or negatively affected. Given the limitations imposed by the COVID-19 pandemic, we took the opportunity to experiment with the technique of online focus groups. Particularly, during the online focus group session for the territorial prioritization of the general SWOT items, the CSs were able to independently and simultaneously vote for the items without being influenced by the other participants. In this context, using the cumulative voting method, they prioritized the SWOT items according to the local contexts and territorial issues, without personal interactions. We believe that this innovative methodology allowed us to collect a self-confident vote on the items that is fully representative of the thoughts of the CSs. On the other hand, during the final discussion conducted with the CSs, we observed the main limitation of the method. Indeed, the discussions in in-person focus groups are easier and more engaging. They could have allowed us to collect more ideas from the participants. However, the method we used allowed us to identify alternative and future planning strategies for the enhancement of the terraced landscapes by starting with the perceptions of the local communities and—according to Moore et al. [76]—overcoming the spatial and temporal barriers. The methodological framework used in our study allowed us to identify common and specific strengths, weaknesses, opportunities, and threats that should be translated into tangible actions and rural development plans. Moreover, the research demonstrated that the recognition of items is a primary step in effectively informing future strategies and policies for rural land management and planning. This methodology is a decision-making tool for land use policy, planning, design, and the management of terraced landscapes in the European Alpine Region, which could be replicated in other terraced contexts in the future.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/land12061252/s1>, Table S1: Description of the items of the general SWOT analysis identified by the decision makers (DM); Table S2: The alternative and future landscape strategies for the enhancement of the terraced landscapes that emerged as essential in the cross-border Italian and Swiss area, and specifically for the different main land uses of terraces, to be developed at local or supralocal levels.

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