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The Value of a Properly Maintained Hiking Trail Network and a Traditional Landscape for Mountain Recreation in the Dolomites

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Abstract: Alpine mountains represent one of the most important tourist destinations in the world, constituting approximately 3.1% of the global tourism market when considering the tourist flows coming from abroad. While there may be numerous factors that motivate tourists to choose rural areas, an important role is played by the opportunity to visit well-conserved landscapes and uncontaminated natural areas. The purpose of this study was to make a monetary valuation of the social benefits generated by the adoption of three measures of the Rural Development Plan (RDP) of Veneto (Italy) aimed specifically at enhancing the recreational usability of the mountain territory. In this regard, a discrete choice experiment (DCE) was applied for the economic valuation, and a qualitative survey was used to collect the opinion of respondents related to the measures to protect the meadows and mountain hiking trails. According to the DCE estimates, on average, the benefits due to the conservation of the existing meadows and pastures was equal to €851 per hectare, those due to the conservation and improvement of the trail network were €12,260 per km, and the benefits due to the recovery of the meadows and pastures of uncultivated and abandoned areas for naturalistic purposes amounted to €6852 per hectare. Comparing the estimates obtained with the expenditure incurred by the RDP to finance the three actions considered in our DCE, it can be seen that the benefits are considerably higher than the costs, especially with regard to the conservation of paths and the recovery of abandoned areas for naturalistic purposes.

Keywords: mountain; landscape; valuation; Common Agricultural Policy; discrete choice experiment; hiking; tourism; ecosystem services; choice experiment; Dolomites

1. Introduction

Alpine mountains represent one of the most important tourist destinations in the world, constituting approximately 3.1% of the global tourism market when considering the tourist flows coming from abroad [1]. In 2016, there were approximately 7.5 million beds in the alpine area, and there were 508 million overnight stays. Mountain tourist flows give rise to a thriving tourist economy, and it can be estimated that approximately 15% of the employment in the alpine area is linked to tourism [1]. Furthermore, it should not be overlooked that alpine mountains are also frequented by numerous daily visitors residing in the valleys or in the plains, and it is therefore able to produce a high flow of benefits related to outdoor recreation. For example, in a study carried out in the Veneto Region (Italy) in 2001, it was found that in the mountains of the Veneto Region there were approximately 9 million recreational events [2]. With the present survey, it has been found that the number of recreational events that affected Veneto mountain in the period from spring to early autumn in 2015 would have reached nearly 13 million, reflecting the growing demand for intact environmental areas with great

landscape sceneries where recreational activities of various kinds can be carried out. Alpine mountains produce an important flow of recreational benefits for the entire community [3].

Despite the numerous factors that can influence mountain tourist flows, the factors can be grouped into two broad categories: Push and pull factors. As stated by Devesa et al. [4] (p. 547), "Push factors are more related to internal or emotional aspects, such as the desire for escape, rest and relaxation, adventure, or social interaction. Pull factors are linked to external, situational, or cognitive aspects, of which, attributes of the chosen destination, leisure infrastructure and cultural or natural features are examples". These factors influence the motivations for a tourist to reach a given holiday location, while the discrepancy between the motivations and the real touristic experience determines the tourist's loyalty to that destination, that is, the degree of satisfaction and the probability that the tourist will return or recommend the destination to others [5,6]. Many studies indicate that the key pull factors for many touristic activities are the characteristics of the environment and the landscape [4,7–11]. Therefore, while there may be numerous factors that motivate tourists to choose rural areas, an important role is played by the opportunity to visit well-conserved landscapes and uncontaminated natural areas [8,12–15] (according to the "Sustainable Tourism in the Alps—Report on the State of the Alps" [16] (p. 48), "The natural heritage is the main criteria for choosing a holiday destination: it is the reason moving 35.8% Italians to the Italian mountain destinations").

In addition to the characteristics of the landscape, another factor that influences the tourist and recreational use of mountain areas is the hiking trail network [17–20]. With reference to a sample of the population living in the Veneto Region, Tempesta and Thiene [18] found a positive relationship between the number of daily trips to the main mountain massif of the region and the density of hiking trails (m/km^2). Thiene and Scarpa [20], with reference to the members of the Italian Alpine Club living in the Veneto Region, found a positive relationship between the probability of the choice of a recreational destination in mountain areas and the length of the hiking trails. Neuvonen et al. [17] found a positive relationship between trail length and the number of visitors in Finnish natural parks.

Over the past decades, there has been a dramatic change of the mountain landscape in the alpine space [21–25]. Farming activities have been progressively abandoned, and the meadows and artificial pastures were reforested. In the Alps, the rate of farmland abandonment is widespread, and in many cases, it is higher than 40% [22]. Especially at the initial stage of the abandonment, meadows were substituted by shrubs, and there has been a degradation of the visual quality of the landscape.

Many studies have highlighted that spontaneous reforestation causes a reduction in landscape appreciation [26–28]. Farmland abandonment affects the visual quality of the landscape essentially in two ways: It reduces the depth of the views (visual scale) and the sense of order or care (stewardship) [29]. People generally dislike dense forests and tend to prefer "the forest edge adjacent to meadows and other small openings" [30] (p. 15). Moreover, people prefer mature forest stands to young stands [30,31] that are typical of the spontaneous afforestation process.

To contrast farmland abandonment in mountain and disadvantaged areas, the European Union (EU) Common Agricultural Policy (CAP) has adopted numerous measures aimed at reducing the income gap existing between the mountain and plain agriculture. In fact, the Rural Development Framework provides payments to farmers located in areas facing natural constraints (Regulation (EU) No 1303/2013—article 31), such as mountain areas. Moreover, by means of the Rural Development Program (RDP), the Regions will have the possibility to promote: (a) The growth and sustainability of rural areas through the development of infrastructures and local basic services, including leisure and cultural services: (b) The renewal of villages and activities aimed at the restoration and upgrading of the cultural and natural heritage of villages and rural landscapes.

The Veneto Region with the 2007–2013 RDP introduced two measures aimed specifically at enhancing the recreational usability of the mountain territory. Through the measure 227 (non-productive forest investments) of the RDP, contributions aimed at the restoration and maintenance of paths were paid. Through the actions envisaged by Measure 216, extraordinary naturalistic recovery interventions have been financed in open mountain areas and in abandoned and degraded Natura

2000 areas. Furthermore, measure 211 grants were made for the conservation of existing meadows and mountain pastures.

The purpose of this study is to make a monetary valuation of the social benefits generated by these three RDP interventions. In this regard, a discrete choice experiment (DCE) was carried out that involved a representative sample of the population residing in the Veneto Region. In addition to the DCE, we collected the opinion of respondents related to the measures to protect the meadows and the mountain paths.

2. Previous Studies

Various methods can be used for the economic valuation of cultural ecosystem services and the landscape, and they can generally be divided into two broad categories: Stated preferences and revealed preferences.

Stated preference methods are based on the formulation of a hypothetical market in which citizens that use a good currently available for free must contribute to its conservation. The two methods most commonly used in this category are the contingent valuation method (CVM) [32] and discrete choice experiments (DCE) [33,34]. In general, by means of these methods, the scholars ask people to state their willingness to pay (WTP) to preserve or to improve the landscape and environment quality. By means of the CVM, the WTP is asked directly, while by means of DCE the WTP is inferred analysing the choice made by the people with reference to alternative landscape scenarios [35]. It is worth emphasizing that DCE present an important advantage with respect to the CVM. By means of this method it is possible to estimate the value of all landscape elements considered by the experiment: In contrast, the CVM permits only one landscape asset to be evaluated at a time or, in other words, the effect of the presence or absence of a particular feature. By means of the stated preferences methods scholars estimate the average WTP (per family or per person) and then compare this figure to the average costs (per family or per person) necessary to implement preservation or improvement policies.

The methods belonging to the category of revealed preferences are based on an analysis of the real behaviours of citizens towards a given environmental and landscape resource. In particular, the demand for landscape and environmental assets is estimated by analysing the relationship of weak complementarity that exists between the use of the asset and the purchase of a commodity in the market. The two main methods belonging to this category are the travel cost (TC) and hedonic pricing (HP) methods. The TC method generally does not allow the identification of the relationships that are established between cultural ecosystem services and the recreational value of the territory. In fact, only by using the multi-site TC is it possible to estimate the contribution that the individual components of the landscape and the territory can give to the recreational value. The HP method allows, at least theoretically, the determination of the effect that the quality of the landscape and ecosystem services can have on the real estate market. However, these methods present operational and analytical difficulties that have strongly limited their application to the estimation of the value of the landscape in mountain areas.

2.1. The Value of Meadow and Pasture Preservation

Contrary to what happens for forests, surveys on the value of ecosystem and landscape services in the meadows and mountain pastures are not very numerous, especially in the alpine area. The estimates were made applying stated preference methods such as the CVM and, especially in more recent times, the DCE.

2.1.1. Contingent Valuation Studies

In general, the studies carried out with the CVM have concerned the WTP of the population as a whole or that of tourists to avoid the degradation of meadows and pastures caused by the abandonment of cultivation. The abandonment of cultivation and pasture involves the spread of

bushes and the reduction of visual amplitude, which results in a reduction of the aesthetic value of the mountain landscape.

In a study carried out in the Marche Region [36], focusing on the valuation of the landscape and the environmental benefits of the Common Agricultural Policy, the authors applied the CVM to estimate the WTP of the population to prevent a reduction of 6.250 ha of meadows and pastures, the disappearance of 280 km of hedges, and the lack of maintenance of 5500 ha of agricultural and forest land. The median WTP estimated was €74.3/family per year, which corresponds to an amount of 3980.6 per hectare. Using a logistic model, the authors found a positive relationship between WTP, high educational qualification, and the previous enjoyment of holidays on a farm. Using the same approach, the WTP of the inhabitants of the Umbria Region was analysed to prevent a reduction of 9000 ha of meadows and pastures, 1000 ha of olive groves with landscape value, 10 km of dry stone walls, and 30 km of natural hedges [37]. In this case the median WTP was equal to 47 €/family per year corresponding to 1692 €/ha.

Gios et al. [38] analysed the tourists' WTP for the preservation of five alpine pastures located in the Campogrosso plateau, a mountain area of approximately 500 ha situated in the provinces of Trento e Vicenza (Italy). The average WTP an entrance ticket was equal to 3.32 €/person, and the total WTP per hectare ranged from €320 to €360.

Tempesta and Thiene [39] estimated the tourists' WTP to preserve 400 ha of still remaining meadows in the Cortina d'Ampezzo valley (Italy). Tourists were asked to indicate their willingness to make a donation to a public-private trust with the purpose of paying grants to farmers to mow the meadows. The average WTP was equal to 3.25 €/year, corresponding to a total benefit of approximately 759.0 €/ha.

Kubíčková [40] analysed the Czech citizens' WTP to preserve the landscape of the Protected Landscape Area White Carpathians. People were asked to express their WTP to prevent the landscape degradation, that inevitably would ensue from the abandonment of the agricultural activity. People were willing to pay on average about €10. The benefits coming from the preservation of one hectare of cultivated land in the White Carpathians was equal to €306.

2.1.2. Discrete Choice Studies

Research that valued the benefits deriving from the meadows and mountain pastures used different approaches regarding both the econometric models used and the means of payment. The comparison of the results in this case is much more complex compared with the CVM studies given that the use of different modelling specifications in the same study can lead to contradictory and not univocal conclusions. Even in this case, however, the studies are not very numerous, especially if compared with those that estimated the ecosystem services produced by other cultural landscapes.

Bernués et al. [41], by a DCE, analysed a number of ecosystem services delivered by the mountain agroecosystems (mostly grazing systems) in the "Sierra y Canones de Guara" Natural Park, a protected area of 80,739 ha in northeastern Spain. The attributes considered were: cultural landscape biodiversity, forest fires, product quality linked to territory, and annual cost. The cultural landscape is given mostly to grazing systems, and the experiment considered three different levels of provision: Abandonment, no change, and rich mosaic. The WTP to prevent landscape abandonment was equal to 26.4 €/person per year while the WTP to improve the landscape mosaic was much lower (9.9 €/person per year).

Scarpa et al. [42] analysed the visitors' WTP to preserve three alpine pastures of the "Val di Genova" situated in Trentino Alto-Adige Region (Italy). Because of their altitude, these pastures are not permanent but typically, the herds pass only the summer in the pasture. The authors considered the following attributes: Landscape, biodiversity conservation, historical and cultural heritage function, conservation of the traditional in situ processing of milk into dairy products (butter and cheese), and access fee. The landscape attribute had three levels: abandoned, tidy, and very tidy. The WTP for the preservation of the pastures was equal to 4.25 €/person.

Mazzocchi and Sali [43] undertook a DCE to value the social benefits coming from the preservation of the pastoral farming of the Seriana, Brembana and Scalve Valleys located within the Park of Orobie Bergamasche Alps in Lombardy (northern Italy). To this aim, a sample of tourists was interviewed. The attributes of the DCE were the presence of grassland, the availability of facilities, accessibility, and a tax increase. With reference to the grassland, four alternatives were considered: decreasing grassland area (and parallel increasing of forest area), degraded grassland, maintenance of grassland, and increasing grassland area (and parallel decreasing forest area). For the accessibility attributes there were three possibilities: By path, by trail, and by road. Note, however, that the trails were not devoted to hiking but to the use of jeeps to reach the alpine pastures and the huts. The WTP to maintain the grasslands or to increase the grassland surface was quite similar (respectively €70.5 and €76.8 per person per year, respectively). The WTP to improve the accessibility was much lower: 26.0 €/person per year for the trails and 22.1 for the roads.

Rewitzer et al. [44] administered a DCE to a random sample of citizens in the Visp Region of the Central Swiss Alps to estimate the value of the ecosystem services of the area. The attributes considered were agricultural heritage; existence and bequest value of biodiversity; area of dry grassland of national importance; landscape aesthetics at typical vistas; protections against natural hazards; and income change caused by a variation of the annually paid tax. The income changes considered six levels varying from +6% to −6%. In the case of the area of a dry grassland of national importance the authors considered four levels: status quo (192 ha), 40% reduction, 40% increase, and 60% increase. Whith regard to the landscape aesthetic, the citizens who participated in a preliminary focus group noticed that the landscape of the Swiss Alps changes due to the forest area increase, the grasslands shrinking, and settlements or road network expansion. Based on these results, the authors added the attributes of change to the forest area, intensity of grassland management, and settlement expansion. On the average the interviewees were willing to pay 0.11% of their annual income to increase the area occupied by dry grassland of national importance and request a compensation equal to 5.66% for the damage generated by the forest expansion at higher altitudes.

Tempesta and Vecchiato [45] analysed the implications of some measures of the Common Agricultural Policy at a regional level on the rural landscape, taking the Rural Development Plan (RDP) 2007–2013 of the Veneto Region in northeastern Italy as a case study. The RDP measures considered were the preservation of mountain pastures and meadows, the preservation of the hedgerow on the plain, an increase of the forested areas on the plain and increase of the grassland on the plain. The authors considered three levels of mountain pasture and meadow provision: 80,000 ha (status quo), 50,000 ha, and 30,000 ha. The payment vehicle was the household income variation caused by the tax payment necessary to subsidize alternative policy scenarios. On average, the WTP for the maintenance of 80,000 ha of pastures and meadows on the mountains was 52.2 €/household per year, corresponding to a value of 1286.9 €/ha.

2.2. The Value of Hiking Trails

The motivations behind the research on the social benefits produced by paths used for walks or excursions of a certain physical commitment can be grouped into two main categories: The estimation of the WTP to remedy the degradation of the paths or to avoid their disappearance and the estimation of the WTP to have a wider network of paths. In this case, both the CVM and the DCE were used, even if the latter approach has been applied more, allowing for a wider range of estimates in the different recreational scenarios of the rural and mountain territory.

2.2.1. Contingent Valuation Studies

Christie et al. [46] estimated the benefits of the trails in the Grampian Region (Scotland), in an attempt to assess the economic effect of informal recreation policy in the Scottish countryside. To this end, the authors considered three basic types of improvement: Path improvements, path creation, and the provision of facilities. A sample of Grampian residents was asked to express their maximum

WTP as an increase in taxation to support the recreation policy under analysis. The average WTP was equal to 4.24 £/household per year (approximately €6.92) for the maintenance of the existing paths, 2.38 £/household per year (approximately €3.88) for path improvement, 2.84 £/household per year (approximately €4.63) for the creation of new short paths, and 1.59 £/household per year (approximately €2.59) for the creation of new long path.

Buckley et al. [47] analysed the WTP to have access to the hiking trails of the Connemara Region (Ireland). The interviewees were shown two showcards that illustrated the differences between the walk without an access agreement (status quo) and the walk with assured public access and recreational facilities under a management agreement. Two different trails were considered in the study. The first trail is located in the lowland, and the second is located in the upland. A sample of visitors to the two trails were asked their WTP by means of a tax increase to have a walk with assured public access and recreational facilities. Fifty-four percent of hikers in the lowland and 44% in the upland were willing to pay to improve the trails and their WTP was equal to 12.2 €/person per year for the lowland and 9.1 €/person per year for the upland.

2.2.2. Discrete Choice Studies

Scarpa et al. [48], in an attempt to support the management of the Ampezzo Dolomites Nature Park, developed a DCE to value many alternative interventions aimed at improving the recreational fruition of the park. A large set of attributes was considered in this respect: The building of new additional thematic itineraries (focusing on flora, fauna, and historical aspects), an increase or decrease in the length of the network of trails and hiking paths, an improvement of the signs along the paths, the creation of new challenge itineraries, the creation of new climbing itineraries along cliffs and crags, the addition of iron cable along the whole path, an increase or decrease in the number of alpine shelters, the crowding level of the trails, the provision of a brochure containing information about the area, and an entrance fee. The authors estimated many models to take into account the effect of attribute non-attendance. However, in general, when significant, the WTP for the increase in the number of trails was negative. Additionally, the WTP for a reduction in the length of the trails (−50 km) is negative, ranging from −1.85 €/person to −16.87 €/person. Considering that the park is visited annually by approximately 540,000 people [49], with reference to the most conservative figure, it is possible to suppose that the annual benefits of 1 km of trails are equal to €19,980.

Howley et al. [50] explored the general public preferences and WTP for farmland walking trails in the Irish countryside. The authors considered five attributes in their experiment: the length of the walk (1–2 h, 2–3 h, or 3–4 h to complete), car parking availability, fencing from livestock, the trail type (gravel path with signage, signage along the trail but no gravel path, and trail with no gravel path and no signage), and the travel cost from home. The average WTP was negative for the longer trails, and people seemed to prefer walks that took no more than 2 h. The interviewees seemed to be concerned with the characteristics of the trails, being willing to pay 12.38 €/visit to walk gravel paths with signage.

Shoji et al. [51] studied trail degradation caused by hiking in a Japanese mountain area (Daisetsuzan National Park). In their research, the authors analysed the most preferred remediation by means of a set of photos representing the visual effect of alternative interventions. They submitted a DCE to a sample of visitors and used the following attributes: Setting chemical fibre or wood-chip mats beside the trails, setting ropes beside the trails, setting educational signs beside the trails, reducing the number of visitors, constructing boardwalks on trails, and cost (one-time payment into a fund for Susoaidaira). The DCE results highlighted that the status quo of trails degradation caused by the hikers reduced the visitors' welfare by an amount ranging from 14,649 to 43,940 yen (approximately €93 or €274). Consequently, the visitors were willing to pay to reduce erosion and trampling, and the most preferred solution was the construction of wooden boards on the trails (WTP = 7168 yen = 45.9 €).

Rolfe and Windle [52], by means of a DCE, estimated the benefits coming from the improvements in the recreation facilities (trails, day and night facilities) and historic sites in two state plantation forests

in Australia. To this end, a sample of users and non-users was interviewed. Mt Lofty Ranges area had 82 km of trails, while in the Mid North Forests, the length of the trails was 42 km. With reference to trails, the DCE hypothesised that through the payment of a generic contribution for 5 years, people living in Adelaide will have the possibility to support the improvement of 20% of 40% of the existing trails. The WTP for the improvement of 1 km of trails in the Mt Lofty Ranges area was equal to 0.30 A$ (approximately €0.22) per household per year for 5 years, while in the Mid North Forests, the WTP was equal to 0.35 A$ (approximately €0.25) per household per year for 5 years. It is interesting to note that in the Mt Lofty Ranges area, the visitors' WTP was 1.66 times higher than the non-visitors' WTP.

3. Materials and Methods

3.1. Case Study Area

The Veneto Region is located in northeastern Italy and covers an area of 18,390 km^2, 56.4% of which is flat, 29.1% is mountainous, and 14.5% is hilly. The regional land structure underwent some intense landscape changes after the Second World War. The meadows were gradually abandoned in the mountain and hill areas, and this was followed by an extensive reforestation process. According to the agricultural census data, between 1970 and 2010, meadows were reduced by 39.9% in the mountains and 49.4% in the hilly areas. Woods recolonised the abandoned meadows, covering a total surface of 395,000 ha. Today, 58% of the land in the mountains and 29% in the hilly areas is covered by woods.

Veneto mountain can be divided into two large areas. The first consists of the Pre-Alps, a mountain range arranged in an east-west direction that separates the vast Venetian alluvial plain from the backwaters of the Dolomite Alpine massifs. For their geological and morphological peculiarities, the Dolomites were listed on the UNESCO World Heritage list in 2009 (the official website is http://www.dolomitiunesco.info/).

Approximately 4.5 million inhabitants live in the plain and on the Veneto hill, while in the mountain areas, the population is 344,000. The number of residents in the plains and hills that frequent the mountain is very high thanks to an extensive network of trails and alpine huts.

In Veneto, there are approximately 8000 km of trails, of which 2170 are managed and marked by the Italian Alpine Club (CAI—"Club Alpino Italiano" in Italian), and the remaining paths are carriage roads and mule tracks. While the carriage roads and mule tracks are also used for forestry and agricultural purposes, the trails are used exclusively for tourism and recreation. Their maintenance is currently entrusted to the CAI and is carried out by its members' voluntary activity. The members of the CAI guarantee both the care of the paths and the trail signs, which allow even the less experienced hikers to use the paths safely. The presence of intense visitor flows and ever-decreasing available resources (human and financial) have meant that in recent years, some trails have been closed to the public, and the state of maintenance in some cases has become precarious.

3.2. Discrete Choice Experiment

Discrete choice experiment (DCE) methodology [53–58] has been widely applied in the last decade for valuation purposes, such as transport studies, environmental valuation, marketing, agribusiness, and public health.

DCEs rely on data collected by means of a survey. A typical DCE survey mimics the real market scenarios by presenting a hypothetical market to respondents. The characteristics of such a market are well defined and described in the survey. After being introduced in the hypothetical market, respondents are asked to choose repeatedly among a fixed bundle of products/services (e.g., a policy scenario in our case) differentiated by a fixed set of characteristics (attributes), such as, in our case, the surface of pastures and meadows, the surface of abandoned and degraded mountain areas and the length of trails to be maintained. The respondent is not usually forced to choose one of the proposed products/services, but can instead opt to do not choose any of the options when the "none of these option" is included among the available options. During participation in the DCE, respondents are

asked to behave as they would in a real market as if they were truly buying the product/service; along with the different product characteristics, respondents are therefore invited to consider their budget constraints. This idea of using a hypothetical market is particularly interesting when valuing the benefits of a future policy scenario that has not yet been undertaken.

DCEs are part of the stated preference methods in non-market valuation and are grounded on Lancastrian Consumer Theory [59] and Random Utility Models (RUMs) [60–64]. The first assumes that utility is derived from the properties/characteristics of the goods/services rather than directly from the goods themselves. The goods/service characteristics (referred to as "attributes" in a DCE) are therefore determinants of the goods/services utility. RUMs assume that the utility derived from goods/services can be broken into a deterministic component and into an unobserved component (stochastic error component).

In practice, the policy examined is split into its key characteristics or "attributes". Attribute levels can be qualitative or quantitative. With a procedure called experimental design, the number of all possible combinations of attributes and levels are reduced. In this way, the researcher is able to present a reasonable number of treatment combinations (or choice profiles) to the respondents. Treatment combinations are usually grouped into "choice sets" so that the respondents choose between a minimum of 2 treatment combinations. To make the choice task more realistic, a further choice option is often added to the choice set: The *status quo*—in the case of policy—or "none of these"—in the case of goods—option. In this way, the researcher derives the probability of a person n choosing alternative i (where the *alternative* is synonymous for a *choice option*) among a set of possible alternatives in a choice set.

In this study, a random parameter logit model (RPL) (also known as Mixed logit) [65] was applied. An in depth presentation of the econometric modelling behind CE models is beyond the scope of our paper; therefore, we direct the reader to other sources [33,34,65] for a more detailed treatment of these aspects.

Welfare measures are derived by looking at the marginal rate of substitution between the non-monetary attributes and the monetary attribute included in the indirect utility function (IUF) [34]. When dealing with additive IUFs, the formula for calculating WTP becomes:

$$WTP_j = -\frac{\beta_j}{\beta_p} \quad (1)$$

where j is the j-th attribute, β is the estimated coefficient and p is the price or cost attribute.

3.2.1. Experimental Design

To estimate the benefits resulting from the implementation of the interventions envisaged by the measures and actions of the 2007–2013 RDP described above, the following attributes were considered: The conservation of meadows and mountain pastures, the restoration and maintenance of hiking trails, and the naturalistic recovery of open and abandoned mountain areas. For each of these attributes, the intervention levels indicated in Table 1 were considered. The respondents were informed that all the interventions would involve a seven-year time frame (the RDP life span), whether they concerned the conservation of meadows or the realization and maintenance of hiking trails and the recovery of areas under reforestation.

The payment vehicle considered is an increase in the general tax burden over a period of time equal to the duration of the RDP, namely, seven years. There are three levels for the cost attribute: €40, €20, and €10 per family per year.

Using an orthogonal experimental design, 12 choice sets were identified, each containing 2 alternatives, plus a third alternative ("none of these" option), which entails a zero cost for the citizens, but which guarantees the permanence of the mountain meadows at the lowest level and that no intervention on the trail network or the recovery of abandoned areas characterized by spontaneous reforestation would be implemented.

Table 1. Attributes and levels used in the discrete choice experiment (DCE) design.

Attributes (Acronym in Parentheses)	Levels
(SURF-MAINTAIN): Maintenance of pastures and meadows in mountain areas *	1. Guarantee of maintenance of 100% of pastures and meadows in mountain areas (80.000 ha) 2. Guarantee of maintenance of 62% of pastures and meadows in mountain areas (50.000 ha) 3. Guarantee of maintenance of 37% of pastures and meadows in mountain areas (30.000 ha)
(TRAILS-LENGTH): Implementation, restoration and maintenance of educational trails and paths, including information and observation points for fauna and related systems and picnic areas in forest and mountain environments †	1. Maintenance of 360 km of trails network 2. Maintenance of 180 km of trails network 3. No action
(SURF-RECOVERY): Creation of structures for wildlife observation—Extraordinary naturalistic recovery of abandoned and degraded mountain areas ‡	1. Actions on a surface of 4.000 ha 2. Actions on a surface of 2.000 ha 3. No action
Cost	Increase in the general tax burden by €40, €20, €10 per family/year for seven years

* Maintenance of pastures and meadows in mountain areas, hill and plain: Veneto RDP 2007–2013 Measure 211 in mountain areas and Measure 214/E for mountain and hill areas. † Landscape and environmental improvements: Veneto RDP 2007–2013 Measure 227 Action 1. ‡ Non-productive investments: Veneto RDP 2007–2013 Measure 216 Action 1 and Action 6.

To avoid fatigue related to the great number of choice sets, the experimental design was divided into 2 blocks of 6 choice sets each. This allowed us to submit 6 choice sets to each interviewee instead of 12.

3.2.2. Model Specification and Data Analysis

Data from the DCE were analysed using a random parameter logit model using an additive utility function where all four attributes were considered in the model as continuous variables. To respect the principle of decreasing marginal utility in the model, a logarithmic transformation of the attributes taken into consideration was used (apart from the cost variable). In addition, some interaction variables were included in the model, which allowed us to identify the possible influence exerted on the WTP by the opinions of the interviewees and their behavioural and socio-economic characteristics.

To test the effect of individual opinions and attitudes, on the basis of the answers given to sixteen questions aimed at analysing the attitudes of the interviewees in relation to the quality of the mountain landscape and the importance of the trail network, we applied *k*-means cluster analysis to test for the presence of respondents with homogeneous characteristics; two clusters were found. Membership in one of the two clusters turned out to be one of the main factors influencing the WTP for the RDP measures investigated.

The following utility function was used to estimate the model (Equation (2)):

$$U(X) = \beta_{Stquo} \times STQUO + \sum \beta_i \times ln(A_i) + \sum \beta_{Cluster2_i} \times ln(A_i) \times Cluster2 + \sum \beta_{Climber_i} \times ln(A_i) \times Climber + \sum \beta_{Hiker_i} \times ln(A_i) \times Hiker + \sum \beta_{Degree_i} \times ln(A_i) \times Degree + \beta_{cost_i} \times Cost, \quad (2)$$

where *STQUO* is a dummy that equals 1 for the statusquo option; *A* represents a vector of all attributes apart from price and the status quo dummy; *Cluster 2* is a dummy variable that identifies respondents belonging to Cluster 2 according to the cluster analysis on the opinions of the respondents about the landscape and recreational activities (see Section 4.2 for a description of the characteristics of the Cluster 2 members); *Climber* is a dummy variable identifying rock climbers; *Hiker* is a dummy variable that assumes a value of 1 if the main motivation for visiting the mountains is for hiking; *Degree* is a dummy variable indicating that the respondents have an educational level greater or equal to a Bachelor's degree; and *Cost* is the increase in taxes attribute (namely, the cost of the policy for the respondent).

3.2.3. Questionnaire Structure and Data Collection

The questionnaire was organized into four parts. After a brief introduction, in which the aims of the research were explained, the interviewees were asked to indicate by a score from 1 to 5 their degree of agreement or disagreement with a series of statements relating to the landscape and the trail network. Subsequently, the interviewees were asked to indicate by means of a score from 1 to 5 what the importance of the presence or absence of some elements to improve the quality of the landscape was.

The second part asked the interviewees to indicate the number of visits they made in the mountains in the Veneto Region or in other regions during the spring-autumn and winter periods. They were also asked to indicate if they had a mountain holiday in the two periods considered. Again, with reference to visits to the mountain, we asked the interviewees to indicate with a Likert scale from 1 to 5 the importance of some elements in choosing a destination for a day trip. Finally, the interviewees were asked what main activities they carried out in the mountains during their trips or holidays.

The third part focused on the DCE, and each interviewee was asked to express his/her preference in the six choice sets presented.

Finally, in the last part, we collected the socio-economic characteristics of the interviewees.

The survey involved 483 residents in the Veneto Region. The interviews were conducted in May and June 2016. The data were collected by a specialized agency (Demetra Opinioni) by means of a CAWI survey (computer assisted web interview) submitted to a panel of respondents residing in Veneto. A stratification of the sample was made based on age, province of residence and sex, in order to have a sample as representative as possible of the population under study. In this sense, however, it must be considered that the chosen instrument, that is, an online questionnaire, typically leads to a deviation in terms of age from the reference values given the lower propensity of populations older than 65 to the use of computers.

The final dataset presents an excellent representation on a territorial basis, with a coherent stratification on a provincial basis and a discrete representativeness for the age and sex ranges. For these last two variables, as anticipated, the population over 65 was not represented and men were slightly overrepresented compared to the expected values of the regional statistics. Looking at previous studies, Ponchia et al. [66] considered the Veneto population including people over 65 while studying cardiovascular risk during physical activity in the mountains. They studied a reppresentative sample of 767 residents in the Veneto Region (phone interviews). The population over 65 was 2% of the sample and 4.2% of the sample for number of visits to the mountain. According to these numbers, we believe that the absence of the over 65 age class did not affect our results, and men were slightly overrepresented compared to the expected values of the regional statistics.

In addition to the variables used for the sampling quotas, many other variables of interest were considered and used for ex-post control of the sample characteristics. Among these, the place of residence with reference to the different altimetric zones of the region (plains, hills, and mountains) is important. This element can, in fact, be considered particularly important because the areas involved in the provision of the contributions under measures 226 and 227 of the RDP concern mountains almost exclusively.

4. Results

4.1. Socioeconomic Characteristics of the Sample

Considering sex, 54.4% of respondents were male and the remaining fraction were females. With regard to age, 54.3% were under 40 (Table 2) while the over 65 age class was not represented. Looking at the sample educational level, 36.2% had a university degree and 49.1% had a high school diploma.

Table 2. Socio-economic characteristics of the sample.

	Respondents	
	n.	**%**
Age Class		
18–29	105	21.7
30–44	157	32.5
45–54	133	27.5
55–65	88	18.2
>65	0	0
Total	483	100
Educational level		
Primary school	2	0.4
Middle school	69	14.3
Secondary school	237	49.1
University degree	175	36.2
Total	483	100
Family members		
1	42	8.7
2	97	20.1
3	133	27.5
4	161	33.3
5	33	6.8
>5	17	3.5
Total	483	100.0
Province of residence		
Verona	86	17.8
Vicenza	95	19.7
Belluno	17	3.5
Treviso	90	18.6
Venezia	70	14.5
Padova	106	21.9
Rovigo	19	3.9
Total	483	100.0
Area of residence		
Plain	407	84.3
Hill	56	11.6
Mountain	20	4.1
Total	483	100.0
Place of residence		
Town centre	162	33.5
Town suburbs	159	32.9
Village	108	22.4
Rural area	54	11.2
Total	483	100.0

A total of 56.3% of the households had less than four members, while 33.3% were composed of four people, 6.8% of five people, and the remaining 3.5% of more than five people. Young people and people with a high educational qualifications were over represented compared to the population of the region. As we noted above, this essentially depends on the data collection method (CAWI) that involved subjects familiar with a computer who, at least in Italy, tend to be younger and more educated than the average population.

With regard to the employment data, 74.3% of the sample was active. The majority of the respondents were employed in the third sector (67.1%), a sizable proportion were in the secondary sector (30.9%), and the remaining 1.9% were in agriculture. Among the non-active, 8.7% were housewives, 8.3% were students, 5.2% were pensioners, and 3.5% were unemployed.

The distribution of the respondents by province reflected the distribution of the population of reference. This figure is particularly important because the recreational use of the mountain is more intense in the provinces closest to the alpine areas and tends to decrease in the parts located in the south of the region.

The majority of the respondents (66.4%) lived in urban areas (centre or suburbs), 22.4% declared to resided in a rural centre, and the remaining 11.2% lived in an agricultural area. For the distribution by geographical area, most of the respondents lived in the plains (84.3%), 11.6% lived in the hills, and 4.1% lived in the mountains. These data reflect, with some deviation, the trend of the Veneto population.

4.2. Opinions about the Landscape and the Trails Network

The respondents were asked to indicate the importance they attached to landscape conservation, the recovery of abandoned mountain areas and the conservation of trails. Of the respondents, 90.9% answered "a lot" or "very much" to the first question, 80.9% to the second question, and 85.9% to the third question. A deeper analysis of the opinions of the respondents in relation to the state of the landscape and the paths and actions to be implemented for their conservation asked the respondents to indicate with a score from 1 to 5 how much they agreed with a series of statements (Tables 3 and 4).

Table 3. Opinions on the Veneto landscape and mountain expressed with a score from 1 to 5 where 5 means "I very much agree" or "very important" and 1 means "I do not agree" or "not very important".

Statement	N.	Mean	St. Dev.	95% Conf. Int.	
				Inf. Lim.	Sup. Lim.
Landscape protection and improvement should be one of the main objectives of the regional agricultural policy.	483	4.25	0.99	4.16	4.34
It is important to improve the landscape because it improves citizens well-being.	483	4.13	1.09	4.03	4.23
It is right to make contributions to farmers in the mountains for the conservation of the environment and the landscape.	483	3.85	1.11	3.75	3.95
All citizens must contribute to the conservation of agriculture and landscapes in the mountain through the payment of taxes.	483	3.74	1.23	3.63	3.85
The rural landscape of the Veneto plain is very depleted.	483	3.23	1.21	3.12	3.35
The rural landscape in the Veneto hills and mountains is very degraded.	483	3.04	1.19	2.93	3.15
The abandonment of pastures and meadows in the mountains is not a problem because the spontaneous reforestation improves the environment.	483	2.44	1.31	2.31	2.56

Widespread among the interviewees was the idea that the protection and improvement of the landscape must be one of the main objectives of a regional agricultural policy and that it is consequently right to make contributions to farmers in the mountains for the conservation of the environment and the landscape (Table 3). This stems from the widespread belief that improving the quality of the landscape contributes to improving the well-being of citizens and that citizens should therefore contribute to conserving agriculture and the mountain landscape through the payment of taxes. It is interesting to note that few believed that the abandonment of pastures and meadows in the mountains was not a problem because spontaneous reforestation improves the environment. The majority of respondents believed that the landscape in the Veneto region was very degraded both in the plains and also, albeit to a lesser extent, in the hills and in the mountains.

Table 4. Opinions on the trail network of the Veneto mountain. The degree of agreement to the questions was expressed by a score from 1 to 5, where 5 means "I very much agree" and 1 means "I do not agree".

Statement	N.	Mean	St. Dev.	95% Conf. Int.	
				Inf. Lim.	Sup. Lim.
Mountain trails/paths are an important tourist attraction.	483	4.32	0.95	4.24	4.41
Mountain paths contribute to keeping a historical trace of the identity of the places.	483	4.32	0.97	4.23	4.41
It is important to maintain the paths in the mountains with the use of public funds obtained through taxes.	483	3.91	1.1	3.81	4.01
Hoteliers / restaurateurs should pay for the maintenance of tourist attractions.	483	3.68	1.11	3.58	3.78
Mountain trails are often degraded and are not very accessible for tourists.	483	3.47	1.04	3.37	3.56

According to the interviewees' opinion (Table 4), the mountain trails have an important role in acting as a tourist attraction and in preserving the historical identity of places. In this case too, the use of public funds for their maintenance is welcomed, although the interviewees supported the idea that economic activities benefiting from the increased tourist flow guaranteed by the trail network should at least partly contribute to the expenditure necessary for their maintenance. Finally, it should be noted that among the interviewees, there was a widespread opinion that mountain trails are often degraded and not very usable.

The respondents were asked to indicate on a scale from 1 to 5 what factors they considered when choosing an excursion destination in the mountain areas (Table 5). The first four factors considered in order of importance were the beauty of the landscape, the absence of confusion and excessive overcrowding, the tranquillity of the place, and the presence of marked hiking trails.

Table 5. Factors that influence the choice of an area for mountain hikes. The importance of each element was expressed by a score from 1 to 5, where 5 means "very important" and 1 means "not important".

Statement	N.	Mean	St. Dev.	95% Conf. Int.	
				Inf. Lim.	Sup. Lim.
Landscape beauty	483	4.42	0.75	4.35	4.48
Absence of confusion and excessive overcrowding	483	4.23	0.83	4.16	4.30
Tranquillity of the place	483	4.19	0.80	4.11	4.26
Presence of adequately marked hiking trails	483	4.06	0.87	3.98	4.14
Travel cost	483	3.68	0.99	3.59	3.77
Possibility to improve the knowledge of the environment and the territory (visitors centres, educational centres, paths, nature, etc.)	483	3.65	1.01	3.56	3.74
Distance from home	483	3.61	0.92	3.52	3.69
Familiarity (having attended at other times in the past)	483	3.45	1.03	3.36	3.55
Presence of picnic areas, areas for children's play, etc.	483	3.35	1.17	3.25	3.45
Possibility of doing sports	483	2.96	1.20	2.85	3.07

With regard to the trail network, we wanted to investigate the elements that contributed to improving the usability of a path (Table 6). The element considered most important was the trail signage and the presence of the numbered Italian Alpine Club trail signs. This highlights the need to

systematically carry out the maintenance of signage that allows hikers to safely visit the mountain territories, even at the highest altitudes. The presence of the observation points of the flora and fauna follow in order of importance, while the importance attached to benches and picnic areas was less important.

Table 6. Factors that contribute to improving the usability of a hiking trail. The importance of each element was expressed using a score from 1 to 5, where 5 means "very important" and 1 means "not important".

Statement	N.	Mean	St. Dev.	95% Conf. Int.	
				Inf. Lim.	Sup. Lim.
Trail CAI signage	483	4.33	0.78	4.25	4.4
Naturalistic observation points	483	4.10	0.86	4.02	4.18
Wildlife observation points	483	4.03	0.89	3.95	4.11
Billboards to illustrate the surrounding flora and fauna	483	3.86	0.93	3.78	3.94
Presence of benches	483	3.61	1.05	3.51	3.7
Presence of picnic areas	483	3.58	1.02	3.49	3.67

Through the scores attributed to the statements in Tables 3 and 4, the respondents were grouped with a non-hierarchical cluster analysis procedure in two groups.

The members of the second cluster, which included 31.9% of the sample, tended to frequent the mountain less in the summer (46% of non-visitors compared to 28% of the members of the first cluster) and attribute less importance to all the problems related to the conservation of the landscape and to the enjoyment of the mountain territory for recreational purposes.

4.3. Touristic and Recreational Activities in the Mountains

Of the respondents, 68.1% said they had hiked in the Veneto Region during the last year, while 30.6% reported having a holiday period in the region. The period of the greatest number of visits to the mountain went from late spring to early autumn, when 64.3% of the respondents took at least one excursion and 30.6% had a holiday.

On average, the interviewees made 3.55 daily trips during the spring-autumn period in the Veneto Region and 0.84 in the winter one (Table 7). According to the data summarized in Table 7, it can be seen that approximately 60% of the excursions to Veneto mountain between spring and autumn were carried out by 14.9% of the interviewees. For winter, 5.4% of the interviewees made 57.1% of the trips. It can be deduced that although visits to the mountain were very widespread, only a very small number of residents frequented the area continuously and with considerable constancy. First of all, the place of residence influenced the number of trips. On average, the number of excursions by the interviewees who lived in the mountains was more than twice that of those who lived in the plains (Table 8). It is also evident that the intensity of the trips progressively decreased as the distance from the mountain areas increased.

For holidays, 16.8% of the interviewees had a holiday period in summer, 5.6% had a holiday in winter, and 8.3% had holidays in both seasons. The average duration in the summer season was 6.5 days, and in the winter season, the duration was 4.8 days.

The main motivations behind the mountain visits were walking in nature (55.7%), the search for relaxation (43.6%), excursions of a certain physical effort (19.5%), and picnics (18.2%). The sporting motive related to non-hiking activities (skiing, mountain biking, running, etc.) involved 17.0% of visitors, mushroom picking involved 11.8%, climbing involved 4.1%, and hunting/fishing involved 1.3% of the visitors (Table 9). Cultural motivations (visits to nature reserves, educational farms, museums, etc.) were important drivers and affected nearly 20% of the visitors. The highest number of

excursions was made by those who make excursions of a certain physical effort and climbers. All the activities of a certain physical commitment were practiced more frequently by the younger visitors, while on the contrary, the more typically extractive activities (mushroom picking, hunting and fishing) were practised more by those respondents over 60 years old. The need for contact with nature also increased with the age of the respondents.

Table 7. Number of mountain excursions (daily trips) to Veneto by period.

N. Trips	Interviewees		Trips		Trips per Person
	N.	%	N.	%	N.
Spring-Autumn					
None	172	35.6	0	0.0	0.0
1 or 2	117	24.2	178	10.4	1.5
3 or 4	75	15.5	259	15.1	3.5
5 or 6	47	9.7	260	15.2	5.5
>6	72	14.9	1018	59.4	14.1
Total	483	100.0	1715	100.0	3.55
Winter					
None	369	76.4	0	0.0	0.0
1 or 2	62	12.8	84	20.6	1.4
3 or 4	26	5.4	90	22.1	3.5
5 or 6	12	2.5	65	15.9	5.4
>6	14	2.9	169	41.4	12.1
Total	483	100.0	408	100.0	0.84

Table 8. The number of mountain excursions (daily trips) to Veneto by geographical area of residence.

Area of Residence	Interviewees		Interviewees Making Trips		Trips		Trips per Person
	N.	%	N.	%	N.	%	N.
Spring-Autumn							
Plain	407	84.3	256	62.9	1233	71.9	3.0
Hill	56	11.6	42	75.0	306	17.8	5.5
Mountain	20	4.1	13	65.0	176	10.3	8.8
Total	483	100.0	311	64.4	1715	100.0	3.6
Winter							
Plain	407	84.3	84	20.6	264	64.7	0.6
Hill	56	11.6	22	39.3	102	25.0	1.8
Mountain	20	4.1	8	40.0	42	10.3	2.1
Total	483	100.0	114	23.6	408	100.0	0.8

Table 9. Hikers and the number of day trips to Veneto mountain by the type of activity.

Trip Motivation	N.	% Interviewees	N. Trips	N. Trips per Person
Relaxing	208	43.1	1261	6.1
Hiking	269	55.7	1755	6.5
Make excursions of a certain physical effort	94	19.5	986	10.5
Rock climbing	20	4.1	286	14.3
Picnicking	88	18.2	627	7.1
Sport	82	17.0	792	9.7
Fishing and hunting	6	1.2	54	9.0
Collecting mushrooms	57	11.8	516	9.1
Cultural reasons	96	19.9	689	7.2

4.4. Discrete Choice Experiment Results

The DCE data were analysed with a random parameter logit model using the statistical software Nlogit version 6, and the results are reported in Table 10.

Table 10. DCE model's results.

Attribute Level	Coeff.	St. Dev.
Random parameters (latent heterogeneity) †		
Ln SURF-MAINTAIN	0.5786 **	0.2292
Ln TRAILS-LENGTH	0.1600 ***	0.0275
Ln SURF-RECOVERY	0.2331 ***	0.0545
Non-random parameters		
STQUO	−1.6569 ***	0.1525
Cost	−0.0630 ***	0.0048
Heterogeneity in mean parameters		
Ln SURF-MAINTAIN × Cluster2	−1.3221 ***	0.2976
Ln SURF-MAINTAIN × Climber	2.0072 ***	0.6884
Ln SURF-MAINTAIN × Degree	0.7772 ***	0.2843
Ln TRAILS-LENGTH × Cluster2	−0.1543 ***	0.0369
Ln TRAILS-LENGTH × Hiker	0.1643 ***	0.0457
Ln TRAILS-LENGTH × Climber	0.2067 **	0.0875
Ln TRAILS-LENGTH × Degree	0.1122 ***	0.0361
Ln SURF-RECOVERY × Cluster2	−0.2021 ***	0.0676
Ln SURF-RECOVERY × Climber	0.3881 **	0.1703
Derived standard deviations of random parameter distributions		
Ln SURF-MAINTAIN	2.2522 ***	0.1649
Ln TRAILS-LENGTH	0.2784 ***	0.0211
Ln SURF-RECOVERY	0.5001 ***	0.0419
N. respondents	483	
N. observations	2898	
Log-likelihood	−2463.62	
Halton draws	1000	
McFadden pseudo R^2	0.2239	

Note: ***, ** significant at the 1%, and 5% levels, respectively. † Random parameters were assumed to be normally distributed. **Legend**: *Ln*: natural logarithm; *STQUO*: dummy variable to identify the status quo option; *SURF-MAINTAIN*: maintained surface (ha) of pastures and meadows in the mountain areas (continuous variable); *TRAILS-LENGTH*: km of implementation/maintenance of the hiking trail network (continuous variable); *SURF-RECOVERY*: recovered surface (ha) of abandoned and degraded mountain areas (continuous variable); *Cluster2*: dummy variable for Cluster 2 members according to k-means cluster analysis; *Climber*: dummy for rock climbers; *Degree*: dummy variable for people holding at least a Bachelor's degree; *Hiker*: dummy variable for people whose main motivation for visiting mountains is hiking.

The model presents a discrete interpretative capacity (McFadden Pseudo R^2 = 0.2299), and all the estimated coefficients were statistically significant (p-value < 0.05) and had the expected sign. All the variables considered in the model had a high degree of heterogeneity demonstrating the great variability of the preferences of the respondents with regard to the three attributes considered in the valuation.

The expected utility from the protection of the meadows and mountain pastures was very high for climbers and for graduates, while it is lower for the members of Cluster 2. A similar result was obtained for the conservation and restoration of the trail network. In this case, it is interesting to note that the utility also increased in the case of the subjects who practised excursions of a certain physical commitment. Lastly, an increase in lawn and pasture areas for naturalistic and non-productive purposes, the strongly negative attitude of the members of Cluster 2 and that considerably positive of rock climbers emerged again.

We looked at the sample heterogeneity of the preferences by analysing the individual estimated WTPs. It was shown that 41% of respondents felt damaged by the expenditure incurred to ensure

the conservation of the existing meadows and pastures, a percentage that decreases in the case of the conservation of mountain paths at 17% and for the recovery of abandoned areas at 26%. The negative value attributed by some interviewees to these interventions probably derives from the aversion to any increase in taxation charged to citizens.

To compare the 2007–2013 RDP costs for the measures under evaluation with their benefits, we calculated the average WTP of Veneto families to finance the three measures considering the maximum level of policy intervention proposed, namely, an area of 800 km^2 of existing meadows and pastures, 40 km^2 of meadows and pastures obtained by recovering currently abandoned areas for naturalistic purposes, and 360 km of paths subject to maintenance and restoration (Table 11). Regarding the conservation of existing meadows and pastures, the mean WTP was €60.24 per family per year. The loss of benefits deriving from the increase in taxation necessary to finance this intervention would be €140.19 per family per year for the members of Cluster 2, while for those involved in rock climbing, the WTP was €212 per family per year, and for graduates, the WTP was equal to €82.41 per family per year. The WTP was, however, considerably lower for the other interventions; this is probably due to their smaller extension. The WTP for the recovery and maintenance of the paths was equal to €15.04 per family per year, was reduced by €14.41 for the members of Cluster 2, and increased by €15.35 for those who practised hiking, by €19.30 for climbers, and by €10.48 for graduates.

Table 11. Mean willingness to pay (WTP) (€/family per year) for the implementation of the maximum level of policy for the maintenance of 800 km^2 of pastures and meadows in the mountain areas, for the recovery of 40 km^2 of abandoned and degraded mountain areas and for the implementation/maintenance of a 360 km hiking trail network.

	WTP (Mean)	95% Conf. Int.	
		Inf. Lim.	Sup. Lim
Ln SURF-MAINTAIN	60.24	17.09	103.38
Ln TRAILS-LENGTH	15.04	9.88	20.20
Ln SURF-RECOVERY	16.09	10.99	21.19
Ln SURF-MAINTAIN × Cluster2	−140.19	−203.43	−76.96
Ln SURF-MAINTAIN × Climber	212.84	68.16	357.52
Ln SURF-MAINTAIN × Degree	82.41	22.71	142.12
Ln TRAILS-LENGTH × Cluster2	−14.41	−21.41	−7.40
Ln TRAILS-LENGTH × Hiker	15.35	6.73	23.96
Ln TRAILS-LENGTH × Climber	19.30	3.08	35.51
Ln TRAILS-LENGTH × Degree	10.48	3.74	17.22
Ln SURF-RECOVERY × Cluster2	−11.83	−19.62	−4.04
Ln SURF-RECOVERY × Climber	22.71	3.11	42.32

The mean WTP for the naturalistic recovery of the abandoned meadows and pastures was €16.09 per family per year, was reduced by €11.83 for the Cluster 2 members, and it increased by €22.71 for the climbers.

Weighting these data according to the consistency of the different categories of the subjects, it can be estimated that the average WTP of the Veneto population was equal to €32.94 per family per year for the conservation of the existing meadows and mountain pastures, €15.33 for the recovery of paths for naturalistic purposes, and €13.25 for the naturalistic restoration of the abandoned meadows and pastures.

5. Discussion and Conclusions

This research has shown that people living in the Veneto Region attach great importance to the conservation of the mountain landscape and to the improvement of the hiking trail network. This result

was highlighted both by analysing the opinions of the interviewees and by estimating the benefits connected to the implementation of the actions envisaged by the Veneto RDP for the 2007–2013 period.

According to the DCE estimates, on average, the benefits due to the conservation of the existing meadows and pastures are equal to €851 per hectare, those due to the conservation and improvement of the trail network are €12,260 per km, and those benefits due to the recovery of meadows and pastures for naturalistic purposes of uncultivated and abandoned areas amount to €6852 per hectare. Considering the DCE estimates, it is also possible to calculate the marginal benefits of the interventions, i.e., those resulting from a unitary reduction of the actions being assessed, which are €127 per hectare for the conservation of the meadows and pastures, €1497 per km for the hiking trails, and €1857 per hectare for the the recovery of abandoned meadows and pastures.

First, the considerable difference between the benefits deriving from the conservation of the areas currently used by farmers and those derived from the recovery of abandoned areas must be highlighted. This discrepancy could be due to the difference in the purpose of the public contributions. In the first case, there was an undifferentiated support for the farms and zootechnics operating in the mountains, while, in the second case, there were targeted interventions with exclusively naturalistic purposes. In fact, the amount of the contributions to farms that obtain revenues from their activities must be lower than those granted to carry out actions that do not provide any economic return but are exclusively aimed at improving the landscape and environmental purposes.

Regarding the hiking trails, the value may seem very high; however, in reality, it must be considered that in the absence of hiking trails, it would not be possible to enjoy for recreational purposes in all mountain areas located at the highest elevations (i.e., those in which the landscape and the environment mountains are undoubtedly more beautiful and more intact). Consider, for example, that without the constant maintenance of the paths, it would not be possible to reach the Dolomite massifs that have been declared a World Heritage Site by UNESCO, and it would become extremely difficult even to be able to climb the highest peaks. It is therefore not surprising that the highest willingness to pay has been declared by climbers and by those who make more physically demanding excursions and reach the highest summits.

The comparison with previous studies is complex due to a number of factors. First, the studies illustrated in Section 2 used different payment vehicles (donations, the payment of taxes, and the payment of entrance tickets). Moreover, the type of payment in some cases was constant and unlimited, in others it was unique, and in others, it still concerned limited periods of time. In addition, in only a few cases, it was possible to compare the estimates to a surface unit or per kilometre. The estimates relating to the conservation of the meadows and pastures are, however, substantially consistent with those obtained by Antonelli et al. [36], Tempesta and Thiene [39], Tempesta and Vecchiato [45], and Torquati and Musotti [37]. The lower values obtained by Gios et al. [38] are probably because, in this study, only the use value of alpine pastures was considered, while, in general, the conservation of traditional landscapes also has a non-negligible component of non-use value resulting from the willingness to pay for the conservation of the cultural and identity value of the territory.

Regarding the hiking trails, from Scarpa et al. [48] it can be estimated that the recreational value of one kilometre of trail in the Natural Park of the Ampezzo Dolomites was equal to 19,980 €/km. This value is higher than that estimated for the entire Venetian mountain; however, in this regard, it should be noted that the Ampezzo valley is one of the most visited areas in the entire alpine area.

To compare the results obtained with the research carried out in Italy and abroad on the recreational benefits of mountain areas with the results of our research, it is necessary to try to identify the WTP for a single trip. In fact, these studies generally report the value per trip and the value per unit area is indicated only in some cases. It is possible to make a conservative estimate that in the summer period, people living in the Veneto Region have made approximately 12.7 million visits for a day trip or during a holiday, and the average benefits per trip correspond to €5.34 for the conservation of meadows and pastures, €3.46 for the conservation of paths, and €2.15 for the recovery

of uncultivated areas. These values are similar to those related to recreational activities in Italy [67] and in Europe [68].

Finally, comparing the estimates obtained with the expenditure incurred by the RDP to finance the three actions considered in our DCE, it can be seen that the benefits are considerably higher than the costs, especially with regard to the conservation of paths and the recovery of abandoned areas for naturalistic purposes. In this regard, it can be assumed that for the actions aimed at maintaining the meadows and pastures, the contributions paid are essentially similar to the benefits produced, and it would be advisable to increase expenditures for the conservation and improvement of the trail network and the reduction of abandoned and uncultivated areas, as the benefits would largely outweigh the costs incurred. In this regard, it should be emphasized that, considering the structural disadvantage of mountain farming, only public support for mountain farms can promote the conservation of mountain landscapes and their use for recreational purposes.

In this respect, one must note that the agri-environmental measures have been only partially successful in achieving their conservation goals [69]. This probably depends on many factors, but of particular importance is the lack of economic attractiveness of the measures that tend to compensate the cost incurred and the income forgone given that these actions neglect that both costs and income vary deeply in the different parts of the mountain [70]. To improve the effectiveness of the agri-environmental measures in the Alps, it will be necessary on the one hand to modify the design and implementation of the measures and on the other to increase the total budget spent yearly to support mountain farming. The results of our research seem to support the social acceptance of such a change in the agricultural policy in mountain territories.

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Abbreviations

The following abbreviations are used in this manuscript:

CAI	Italian Alpine Club ("Club Alpino Italiano" in Italian)
CAP	Common Agricultural Policy
CAWI	Computer Assisted Web Interview
CVM	Contingent Valuation Method
DCE	Discrete Choice Experiment
EU	European Union
HP	Hedonic Pricing Method
IUF	Indirect Utility Function
RDP	Rural Development Plan
RPL	Random Parameters Logit Model
TC	Travel Cost Method
WTP	Willingness To Pay

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