The Value of Natural Resources for Tourism: a Case Study of the Italian Alps

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INTRODUCTION

This paper presents the results of research carried out in the Italian Alps aimed at determining the value that tourists attribute to a natural environment characterised by alternating pastureland and forest. The research is based on the contingent valuation method and contributes to the identification of sustainable ways of using the environment.

In recent years the problems of respecting and safeguarding the environment have been receiving increasing attention due to the growing consciousness that the time remaining to find effective solutions to a correct management of environmental goods is rapidly decreasing. There are at least two obstacles to research aimed at finding solutions. On the one hand, there is the complexity of the environment which produces innumerable (and not always noticed) benefits, and on the other hand, the specific nature of these resources which means that the market is not able to allocate them efficiently (Pearce and Turner, 1994).

With the objective of overcoming these obstacles, in the developed world various strategies of intervention have been defined. These include the ‘command-and-control’ instruments, economic and financial incentives and/or fees, voluntary action, and direct intervention in the management of natural resources by a public corporation or a nationalised industry (Merlo, 1995). Whichever the option chosen, for each case, so as to operate efficiently, the costs and the benefits that these bring need to be evaluated. This presupposes that it is possible to measure the benefits of the natural resources in question. Obviously a complete evaluation of the benefits arising from variations in the level of supply of a natural resource should include all the benefits that this natural resource provides. This last point is certainly not easy even if the diffusion of the so-called ‘Total Economic Value’...
approach is an improvement on the traditional economic evaluation of natural resources. The latter is essentially centred on the benefits the environmental goods produce for the user, integrated with the so-called ‘intrinsic benefits’, which represent the values attributed to environmental goods and natural resources per se, that is to say, independently of whether or not the natural resources are actually utilised (Bresso, 1993).

Notwithstanding the fact that the techniques available are not without defects, and the valuations obtained do not always produce coherent and trustworthy results, the possibility of measuring some of the benefits produced by the natural resources allows the use of suitable strategies at both the macroeconomic and the microeconomic level. To demonstrate this, possible solutions are suggested here for sustainable tourism in an area of the Pre-Alps between Veneto and Trentino. These solutions are a result of research carried out using the contingent valuation method. Critical information was gathered that enabled the adjustment of interventions in relation to both the actual opportunity and the benefits deriving from the natural resources studied.

NATURAL RESOURCES AND THE DEVELOPMENT OF THE MOUNTAIN REGIONS

New development models are urgently needed in mountain areas. In such areas the traditional agricultural economy has diminished in importance, but in many cases alternative development models are difficult to identify. Abandoning agricultural activities has also often led to a deterioration in landscape quality and, consequently, to a reduction in the capacity to attract visitors and tourists, who are indispensable to the creation of jobs and income sources in these areas. It therefore appears essential for the vitality of the Alpine region to highlight the relationship between low environmental impact tourist development and natural environment.

The depopulation of mountain regions, which has its greatest impact upon small communities, is but one aspect of the concentration of population into particular areas and its rarefaction in others that has been of concern to the advanced industrial nations during the past decades. Such depopulation can be viewed as the opposite of the movements begun in medieval times caused by the need to increase the area of land in agricultural use to sustain the growing population.

Although the keys to understanding these centuries-old movements may well be many, the decline in mountain regions can be viewed as a negative side-effect of the adoption, during the past two centuries, of new technologies. On the other hand, these new technologies form the basis of increases in productivity and the improvements in the way of life. Technical progress is rarely neutral as it causes new imbalances between different regions, or more frequently, exacerbates those differences already in existence. In particular, development based upon the capitalist industrial system, by its very nature, has been spatially concentrated and oriented towards the city (and often a product of the city itself). This has led to great imbalances within the territory and to an increase in the economic marginality of some areas, amongst which many are mountain regions. Guichonnet (1987) observed, ‘at the end of a century and a half of transformation, often piercing, the modern Alpine world is characterised by disparity and imbalance. Spatial disparities between active zones and passive sectors, between the traditional mountain and the urbanised areas; socio-economic contrasts between the decline or stagnation of rural life and the development of industry and tourism, always producing diseconomies, imbalances between incomes and opportunities available to the inhabitants’.

At the root of such effects in mountain regions there is the fact that most technological innovations are largely the result of the application of scientific discoveries which are neither directly stimulated by the real problems of the various areas nor by the economic agents living there (Gios, 2000). For many regions and for many economic activities, the situation is aggravated by the impossibility of controlling the flux of innovation coming in from without, that is to say, from external sources, so that a vicious circle is created which brings a growing dependence upon external decision-making centres.
Therefore, the development of an area and of an activity depends upon the ability to profitably adopt new productive technologies and new organisational models, even if these technologies were, in the majority of cases, invented for completely different situations. It seems obvious that in order to ensure sufficient permanent density of population without bringing lasting damage, the adoption of cultural and technological change in respect of the environment is not an easy transformation to bring about, even if at all possible.

If the problem is one of not utilising purely imitative development strategies (these are certainly losers in the long run) then it is self-evidently necessary to evaluate the local natural resources to the maximum. There is no doubt that a fundamental resource for the mountain community is the environment, that is to say, as an entirely whole entity composed of the natural resource found in a given territory. Although in a pre-industrial rural society the control of the territory was largely a specific prerogative of the local community, the industrial society and the modern state changed this situation. Local communities have increasingly become subsystems of large-scale systems which interfere in the organisation and the control of the territory in relation to both ancient systems of organisation and control, and to new uses directly or indirectly generated by economic agents.

Thus the tendency is to impose constraints which limit the possibilities of using the natural resources. Evidently, the problem is not composed of the constraints per se, because they can to a certain extent be considered useful and inevitable. More than anything the problem lies in the fact that frequently these constraints come from the interests of communities which are not the local ones causing situations of conflict and inefficiency.

At this point it is worth recalling general criteria in order to understand the environmental question correctly.

(1) The environment is a single unitary reality composed of diverse factors which are related to each other.

(2) The environment is a dynamic reality in a continuous state of transformation. What can be seen or cannot be seen today is the result of a long process in which the various environmental factors and the human activity have interacted through time in many different ways.

(3) The term 'natural environment' no longer means the same as the environment in its natural state. The Alpine landscape is largely a result of centuries of agriculture acting upon the evolutionary process of the soil, creating a more favourable equilibrium to the need of humans for a better life (Scaramellini, 1997).

(4) The definition of the environment comprises the natural resources as an entity, a whole, whose quality notably affects, if not marks, the quality of life for mankind. The knowledge, the protection, the reconstruction and the correct management of the natural resources represent the priority objectives of environmental politics.

Because of all these considerations the environment cannot be reduced to an isolated aspect or limited to an area with particular characteristics. Instead it involves all the territory and is in relationship with every aspect of human life and human activity. Correct and sound environmental politics must therefore refer to a comprehensive model of development, and place the development of the local community at the centre of its concerns (Osti, 1997). To be rejected is thus the attempt at considering local resources as public ones and at managing them in the general interests without any compensation to the local population in cases where the natural resources are qualitatively or quantitatively diminished. With regard to this logic, particular attention must be paid to the relationship between economic development of the community, environmental protection, and tourist activity. The latter can be viewed as a modern method of using those natural resources which in medieval times brought about the populating of the Pre-Alpine and Alpine areas.

Nowadays, however, on the one hand tourism seems able to provide economic development in many mountain areas, on the other this economic activity can cause imbalances between the various components of the ecosystems.

Tourist and recreational activities can be classified in various ways: according to the
place in which they take place, to the type of purpose pursued, to the structures and to the costs necessary for them to take place. For the purposes of this discussion, two possible classifications are of interest. The first (Tempesta, 1994) relates to the following categories of benefits:

1. symbolic-appreciative (which allows appreciation of natural beauty);
2. symbolic-extractive (which involves the export of a trophy as in hunting);
3. passive (which implies limited physical effort);
4. educational-socialising (which allows establishment of relations with other people);
5. expressive-active (allows an activity whose context is environmental, such as skiing).

That there is limited substitution between these categories is an important observation. On the contrary, the substitution is high within each single category.

It is possible to make a second classification of recreational and tourist activities by examining the relationship between the costs sustained at the level of the individual and the costs in terms of the fixed investments in the territory. Tempesta (1994) puts forward the following schema (see Figure 1).

The above classification (Figure 1) is important because, in the case in which the fruition requires high investment costs and high plant management costs, it is possible to recover part of the income associated with the use of the natural resources. Such a money flow brings directly or indirectly job creation and income, contributing to the development of tourist districts in some Alpine areas.

It is important to note that this possibility of income recovery derives, among other things, from those investments which create conditions whereby access to the natural resources becomes excludable. In other words, the investment changes that which was a public asset into a private asset. From a historical point of view, it seems that the characteristic evolution of agricultural activities in areas near populated centres is being repeated. In fact, in this case too, the high investment costs necessary to increase the fertility of the land have been both cause and effect of the necessity to change from collective possession to private property.

On the contrary, however, in the cases in which the investment necessary for the utilisation of natural resources is not so expensive, a mechanism of exclusion is often not convenient, even if technically feasible. Belonging prevalently to this typology are the forms of so-called soft tourism (ecotourism or low environmental impact). In these cases it is difficult to find methods from which the income from the natural resources is used to the advantage of collective possession.

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<table>
<thead>
<tr>
<th>High INVESTMENT AND ADMINISTRATION COSTS</th>
<th>Low INVESTMENT AND ADMINISTRATION COSTS</th>
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<tbody>
<tr>
<td>Hunting in A.T.C</td>
<td>Game-preserve in private areas</td>
</tr>
<tr>
<td>Fishing</td>
<td>Touring skiing</td>
</tr>
<tr>
<td>Boating</td>
<td>Hiking in mountain areas</td>
</tr>
<tr>
<td>Mushrooms collection</td>
<td>Visits in natural parks</td>
</tr>
<tr>
<td>Motor bike</td>
<td>Jogging</td>
</tr>
<tr>
<td>Hike in open spaces</td>
<td>Sport in open air</td>
</tr>
</tbody>
</table>

Figure 1. Classification of recreational and tourist activities in relation to individual costs and to investment costs. (Source: Tempesta, 1994).
of the local population. Returning to the historical paragon, this situation resembles the one that occurred when forests, woods and pastures were exploited as free access resources until, at a certain point in history, institutional mechanisms such as village property (commons or collective rights, etc.) were activated which introduced exclusion mechanisms for these resources (Ostrom, 1990).

Therefore a central point for landscape and recreational activities that do not require heavy investment is to find mechanisms which allow their enjoyment only after a monetary payment (Merlo et al., 1999), e.g. allow access to a place only through the payment of an entry ticket. For this an estimate of the economic value of the natural resources and the environmental goods is indispensable. Indeed, these estimates represent a starting point for the definition of political and economic interventions that are effective and balanced. Above all this is valid in cases where, within the same territory, there are activities which at one and the same time have positive and negative aspects. For example, this is the case which occurs with agricultural and tourist activity in mountain areas. In these cases the absence of adequate recompense can cause those activities with positive aspects to disappear, provoking the vicious circle of depopulation, which may also continue to the point where the whole areas becomes completely uninhabited.

ESTIMATE OF THE LANDSCAPE AND RECREATIONAL VALUE OF THE CAMPOGROSSO AREA

Given the relationship between tourism and natural resources, outlined above, it is clearly necessary to attempt a monetary valuation of the benefits that tourists derive from a pleasant landscape. In doing so we must also bear in mind that the failure of the market system to assign a correct value to natural resources can be justified on the grounds that natural resources frequently assume the characteristics of being free access goods or public goods and as such cannot be bought or sold on the market.

The necessity of using an alternative approach to estimate the economic value of environmental goods and natural resources has required the development of ‘non-market valuation methods’, which are able to assign to environmental goods values analogous to those expected for market goods, based on ‘surrogate markets’ or ‘adjusted markets’.

Among all non-market valuation methods the most flexible one is the ‘contingent valuation method’ (Gios and Notaro, 2001), as it estimates the value attributed by the individual to an environmental good on the basis of their declared ‘willingness to pay’ (WTP) for an increase in well-being, or their ‘willingness to accept a compensation’ (WTA) (Bishop and Romano, 1998; Mitchell and Carson, 1989, Notaro and Signorello, 1999; Randal et al., 1983; Stellin and Rosato, 1998).

Information concerning the evaluation of the landscape and recreational values is presented here. This was obtained through appropriate investigation around the area of Campogrosso situated in the province of Trento and Vicenza (northern Italy), and is between 1300 and 1500 m above sea-level. The plateau of Campogrosso extends over a total surface area of approximately 500ha and is occupied by five alpine pastures. No permanent settlements are to be found in this area. The countryside is Alpine, marked by valleys, basins and cols. Wide extensive meadows interrupted by beech woods and by isolated conifers give the environment a characteristic appearance. The area is used for summer pasture. To this end it is important to point out that since the area is situated under the tree-line, lack of use at any time in the future could rapidly bring about total re-afforestation, which would consequently cause a large decline in the landscape’s aesthetic value.

The area is the destination of numerous visitors, the great majority of whom come from the Veneto region, with only a small part coming from the Trentino province. For some years one of the two access roads into the area. The use of cars is allowed for the management of the mountain pastures, for residents of Vallarsa (who have a collective right of access over the area’s land) and automobiles may enter before 8 a.m. by paying for a ticket of access costing 2000 lire. Has been closed to motorised traffic by the town-council of Vallarsa and specifically the stretch of the road
situated in the territory under discussion. The decision has been viewed by the Veneto province’s inhabitants as an intolerable outrage. This generated argument, provocative newspaper articles, motions in the local, provincial and regional councils, and parliamentary intervention in an effort to make the town-council of Vallarsa withdraw its decision.

In the case under study the contingent valuation method was applied to determine the economic value the community attributes either to the existence of the area or to its fruition, focusing, in particular, on its landscape and recreational value.

During the summer of 1998 a sample of 1113 visitors was interviewed. They were asked about their willingness to pay (WTP) for an entrance ticket for the purpose of providing funds which would be used to prevent changes within the territory and any consequent deterioration in the quality of the area. The hypothesised scenario assumed that the pasture would be abandoned. In fact Crowe (1978) noted that 'in order to maintain a good landscape there must be contrasts between open areas and woodland, changes of the species of trees, contrasts between the type of farming, and every other type of vegetation'. In addition, the meadows in the area are not 'natural', but the result of human labour. Without human intervention through the use of Alpine pastures there would be a rapid return of the woodland throughout the area.

When estimating the economic value of the area particular attention was given to distinguishing the individual components of the total economic value. Thus the ‘use value’, ‘option value’ and ‘non-use value’ were analysed separately. As known, the ‘use value’ components are connected to the utilisation of the good. Utilisation can range from the process of production and consumption to the simple pleasure derived from looking at the countryside (the aspect considered in this study). ‘Option values’ are connected with the preservation of the goods in view of hypothetical future use, and the ‘non-use values’ are derived from particular forms of altruism which give rise to so-called existence values. The calculation of the various values is made by multiplying the average WTP by the number of units constituting the relevant population, which is to say, the summer visitors to the area. Moreover, since the individualisation of all the visitors was practically impossible an estimate was made through a sampling process. This process enabled thresholds to be obtained: an inferior threshold (pessimistic estimate) and a superior threshold (optimistic estimate).

From the statistical point of view obtained observations were first treated by eliminating outliers, and then explanatory variables of the bid were defined. The obtained results were subjected to the customary statistical tests and were found to be valid and reliable, and can be synthesised in the following way.

First, the average willingness to pay for an entry ticket to visit the area of Campogrosso was valued at a little under 6300 lire (approximately €3.25). With reference to the summer months, the aggregate annual value was calculated to lie between 310 million lire (€160 000) (pessimistic valuation) and 352 million lire (€182 000) (optimistic estimate). After this a simple sensitivity analysis was performed by calculating the capital value of the two different valuations (optimistic and pessimistic) with four different interest rates with the purpose of showing the possible incidence of the intertemporal discount rate on the results of a later cost-benefit analysis. Table 1 shows the results obtained.

Average willingness to pay a single bid in order to contribute to funding the costs of reviving the area after an eventual closing period of 10 years, was calculated to be 12 718 lire (€6.50). The aggregated option value for the area of Campogrosso was 627910484 lire (€324 000) according to the pessimistic valuation, and 711842132 lire (€367 000) according to the optimistic one.

Table 1. Capitalised use value of Campogrosso area (in lire). (source: Gios and Notaro, 2001)

<table>
<thead>
<tr>
<th>Interest rates (%)</th>
<th>Pessimistic estimate</th>
<th>Optimistic estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>31038830134</td>
<td>35188238254</td>
</tr>
<tr>
<td>1.5</td>
<td>20692553423</td>
<td>23458825503</td>
</tr>
<tr>
<td>2</td>
<td>15519415067</td>
<td>17594119127</td>
</tr>
<tr>
<td>3</td>
<td>10346276711</td>
<td>11729412751</td>
</tr>
</tbody>
</table>
Lastly, the average willingness to pay a single bid for the protection of the area for future generations on the hypothetical basis of all visits ceasing in future years was measured at 15,621 lire (€8). The non-use value was thus pessimistically valued at 771,186,554 lire (€367,000) and optimistically valued at 874,282,184 lire (€451,000).

The total economic value of the Campogrosso area taking only the actual summer usage of the area into account, was calculated by aggregating the pessimistic and optimistic valuations of the use value, of the option value and the non-use value, according to various rates of interest (Table 2). It can be seen from Table 2 that the total economic value varies from 36,774,362,569 lire (€18,992,000) — pessimistic estimate capitalised at an interest rate of 1% — to 11,745,364,748 lire (€60,650,000) — pessimistic estimate capitalised at 3% rate.

In this study it does not seem to be appropriate to discuss the merits of the estimated values obtained (they are not directly usable for the purposes presented in the next paragraph but they serve the purpose of giving an idea of the potential ballpark values). Moreover, the first useful observation is that the values are much greater than those obtained by hypothesising a mixed pastoral–forest use of the area, which, in its most optimistic form, is in fact around ten million lire (€50,000) a year less. Nevertheless, as has already been observed, it is this mixed pastoral–forest use of the area which makes the use of the area by the tourists possible. It should be noted that for such positive externalities the farmers do not receive any recompense. Second, the local community has an environmental wealth of notable value at its disposition which produces very relevant annual benefits but which only make a modest contribution to the local economy. The area in question, at least the largest part lying in Trentino, is lacking any structure or mechanism through which these benefits can be received, except a modest level of benefit going to some local hotels in the closer locations. In addition, less than 2% of those interviewed had stayed for a period in local hotels in the Vallarsa valley.

Even if analytical studies may show notable differences between different areas whether in terms of total numbers of visitors or in relation to the WTP for the fruition of the area, the area of Campogrosso can be considered to be representative of many mountain areas.

In conclusion, as a general rule, the whole area constitutes an environmental wealth which is not utilised, or is utilised only minimally, for the benefit of the local population. As has already been observed, to succeed in modifying this situation is fundamental to the future development of this area.

### SOME WORKING PROPOSALS

As already underlined, in several Alpine areas the evolutionary passage to a tourist economy has come about through heavy capital investment in plant and construction costs. Through these investments access to the natural resources is no longer free but requires some form of payment, which then goes to repay the capital invested, and to a certain extent represents a form of compensation for the use of the natural resources themselves.

In the area examined no investments in plant to create winter tourism can be imagined or seem to be a possibility. Neither can a high level of investment in hotels or holiday homes be imagined, which would guarantee a certain income from the utilisation of the natural resources (if it were possible to bring them about). The only form of tourism imaginable is soft tourism, or in other words, tourism compatible with the maintenance of a high quality environment. But for the reasons seen above, this type of tourism brings few benefits to the local community, and indeed, frequently brings additional expense to the local community. In fact, such tourist influxes degrade not only the territory but also the minimal infra-

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Table 2. Total economic value of Campogrosso area.

<table>
<thead>
<tr>
<th>Interest rates (%)</th>
<th>Pessimistic estimate</th>
<th>Optimistic estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32,437,918,171</td>
<td>36,774,362,569</td>
</tr>
<tr>
<td>1.5</td>
<td>22,091,641,460</td>
<td>25,044,949,818</td>
</tr>
<tr>
<td>2</td>
<td>16,918,503,104</td>
<td>19,180,243,442</td>
</tr>
<tr>
<td>3</td>
<td>11,745,364,748</td>
<td>13,315,537,066</td>
</tr>
</tbody>
</table>

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structure on which the tourism itself relies. Vehicular traffic causes damage to the unpaved roads, mountain bikes damage the paths and meadow land, and the maintenance of this infrastructure is paid for at the expense of the local community.

Therefore one might ask: what can be done? Such a requirement is not easy to meet. At present there are not many consolidated examples able to conciliate low environmental impact tourism with local development. However, some good news in this direction can be found in the growing flows of tourists towards nature parks, and in development projects based on European Union LIFE programmes (Clauser, 2004).

In the case in question an immediate solution might be to impose an entry ticket on all the visitors. At the present time this solution does not seem to be practicable even if it might come about at some point in the future. Apart from the technical difficulties of collecting entry ticket payments, the average sensibility does not seem to be mature enough yet to accept this form of payment. What seems to be possible is the creation of a net of light infrastructures which allows the rational utilisation of the natural resources. The use of this infrastructure must obviously be by payment. It seems clear that to introduce forms of payment is either not easy or not possible in any cases. In fact, in the case in which the number of visitors will be under a determined threshold and the collection costs be high, it is quite possible that the collection costs might well be higher than the possible benefits. Furthermore, as in the present case under discussion, the objective is not so much that of gaining an income, but more that of creating job opportunities in the area, so it could be interesting to apply payment for access in all cases where the collection costs are lower than the fees collected.

Specifically, in the case of the area under examination, the following hypotheses can be made:

1. Restrict the access of all cars to the summit areas while, at the same time, creating car parking near the various access points to the summits, with parking fees charged.

2. Along the footpaths, create equipped rest areas for lengthy breaks which can be used only by holders of an appropriate permit, and prohibit any form of activity outside these equipped rest areas.

3. Introduce a permit for access by mountain bike on land, roads and footpaths which are community property, with the monies raised by this permit being used to maintain the local agricultural and pasture activities.

All aims of promoting tourism in the area must be accompanied by the introduction of mechanisms which reduce, or even cancel, the cost of using the infrastructure for those who stay in the local hotels.

Obviously an organisational instrument to manage all the changes described above needs to be constituted. Even if the management should be of a private nature, this organisational instrument should mix the involvement of both public and private organisations. Such mixed organisations seem to be those best suited, even from a theoretical point of view (Cornes and Sandler, 1996; Merlo et al., 1999; Raffaelli and Gios, 2001) to the management of the so-called ‘club goods’, and so is valid for the case examined here as all the environmental goods have facets lying in both the public and the private domains.

REFERENCES


