



# Forest resources and sustainable tourism, a combination for the resilience of the landscape and development of mountain areas



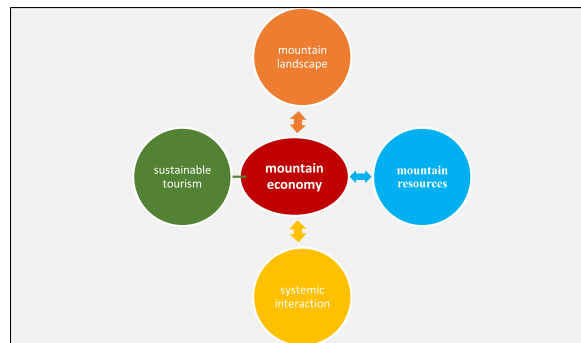
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## HIGHLIGHTS

- The correct management of the resources of the mountain areas creates development and growth.
- The mountain economy must be integrated with the hill and the plain.
- The sustainability of the mountain is important for the landscape and the environment.

## GRAPHICAL ABSTRACT



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## ABSTRACT

The development of sustainable tourism models has been widely discussed in the economic literature. If on the one hand the demand for tourism has grown in recent years, on the other it is necessary to have adequate planning and political tools. The problems of sustainable tourism appear more complex when sustainable tourism involves development opportunities that require the support of the local community and the management of natural resources which are generally common goods. In these circumstances, new management structures need to be created, which can both meet the needs of the local community and ensure adequate management of natural resources. This study analyzes the connections between sustainable tourism models and natural resource management considering the case of the forest landscape. The study highlights how the correct management of public goods can lead, on the one hand, to satisfying demand and, on the other hand, creating opportunities for sustainable development of the environment.

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## 1. Introduction

From the economic point of view, the tourism sector has been a driving force in many countries of the world. In recent decades, a significant amount of research has focused on the need for a sustainable paradigm for tourism. From the international, European and consequently

national, regional political context and finally in the local communities currents of thought emerged, institutions of economic funds, norms and directives for the proposal of a sustainable development of the territory through tourism. The contrast between gradually expanding global economic growth and the resulting pressures on natural systems has gradually become relevant due to its critical nature; as early as the seventies and eighties of the last century, attention was focused on traditional themes, such as protecting endangered species and improving the quality of the air we breathe or the water we drink by reducing

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pollutant emissions. Now the emphasis is on a more systematic approach that takes into account the correlation between the various themes and their global dimension. This means moving from a recovery policy to a strategy for preventing environmental deterioration. The theme of sustainable tourism is based on the ecological, social and cultural carrying capacities of the territories subject to tourist reception. In this context, the forest landscape is one of the main elements that have receptive characteristics: in fact, the forest landscape can perform various functions in the field of tourism, it can be a tool for tourism activities, as well as a “resource container” or simply a background. In this paper we analyze how sustainable development strategies can be promoted through tourism in mountain areas.

The literature on the subject is vast. Indeed, [Pan et al. \(2018\)](#) highlight that the new challenges of sustainable tourism must be sought in the systemic relationships between community, culture, environment, ecology and energy, water and food. Other studies ([Akadiri et al., 2019](#); [Mäntymaa et al., 2019](#)), highlight the relationships between the globalized world, pollution and tourism. Coastal tourism is also an important aspect and its development must be seen in an ecosystemic perspective ([Drius et al., 2019](#)). Other reflections on sustainable tourism linked to natural resources come from the studies of [Blancas et al. \(2011\)](#) which highlight how sustainable rural tourism is at the center of the development of rural areas. Sustainable development indicators allow us to affirm that the balanced management of the territory determines a long-term rural tourism offer. Some studies highlight how products deriving from forest areas represent a natural advantage and in order to remain so, man and legislation must adapt to the changing world ([Melnykovych et al., 2018](#)).

The first part of the paper focuses on sustainable tourism; subsequently we will focus attention on forest resources which represent a fundamental resource of mountain areas. The paper continues by analyzing the life stages of a tourist resort. Finally, the paper examines how mountain areas resources can help create development paths for mountain areas.

## 2. Review of the economic literature on sustainable tourism

Over time, man has always moved in order to discover new landscapes that, especially in the past, were connected to the search for better living conditions. All this has determined diversified lineages linked to the local settlement ecosystems ([Ceruti and Bocchi, 2004](#)). With the advent of colonization, and consequently the mixing of these bloodlines, certain ethnic and ecosystem balances were already beginning to be undermined. The meeting of populations also led to microbial unification which had devastating implications for pre-Columbian civilizations. Any contemporary traveler in fact finds himself to discover new places for eventuality or need or simple curiosity. This shift, the daily working movement of many people that has generated a habitual life condition, the improvement of the ways and means of communication that have reduced time and space and the increase in free time have meant that in recent decades more and more people moved from one part of the world to another. The new lifestyles of modern and post-modern societies, the increase in leisure time, have determined new needs in man such as travel. Traveling, however, does not only entail the physical movement of the traveler, also the activation of an entire supply chain for the production of goods and services that revolve around the individual or the mass of travelers on the move, thus creating the demand for transport services, accommodations that allow you to take advantage of local goods. Just to overcome the needs of those who traveled, at the beginning of the twentieth century the tourist industry was born, aimed simply at making pleasant and facilitating the activities of those who were far from a familiar place. Subsequently, tourism acquired a significant position within the large-scale economy as it began to affect different sectors: naval and aeronautical industry, crafts, secondary transport, hospitality construction and a whole series

of related activities that brought tourism to be, to date, the first item of world economic exchange ([ARPAV, 2005](#)).

Considered only as a rather fruitful sector, investment began in this direction, leaving out related and potential problems due to the confidence placed in the increases in the world economy that would have led to a certain positive global development that could fill these problems. Until the 1960s, in fact, tourism was considered a “smokeless industry” ([Berno and Bricker, 2001](#)), which generates clean wealth. Only in the 70s, with the advent of environmental organizations that focused public opinion on environmental issues, there was an increase in attention in relation to the anthropogenic pressure that the territory receives and therefore on the costs that indiscriminate tourism involves on all the levels. According to the WTO (World Tourism Organization) “the development of sustainable tourism meets the needs of tourists and host regions and at the same time protects and improves opportunities for the future”. It is a form of development that should lead to integrated management of resources so that all economic, social and aesthetic needs can be met while maintaining cultural integrity, essential ecological processes, biological diversity and conditions basic for life. According to the definition, tourism as sustainable must be based on three pillars: social sustainability, environmental sustainability, economic sustainability, as enshrined in Agenda 21 for the travel and tourism sector of 1996 ([ARPAV, 2005](#)). This provides for the implementation of sustainable management and development solutions thanks to the integration and the right balance between them and the respect of basic principles, such as: the precautionary principle, inter and intra generational equality, the sense of responsibility for protection of the environment and natural resources for future generations. Mass tourism has been accused of being the cause of many types of pollution (destruction of some animal and plant species, dispersion of the foundations of local culture, deterioration of monuments). We therefore refer to the definition of “responsible tourism”, which should ensure the minimization of costs and the maximization of the benefits linked to tourism activities, and simultaneously distribute costs and benefits equally in the territory. In practice, the number of tourists in each locality should be limited to a quota calculated on the basis of a maximum tourist utilization threshold. Some have criticized this approach as being considered too ambitious, since it tries to give minimal solutions to a problem such as that of international tourism, absolutely macroscopic and difficult to control ([Montanari, 2009](#)).

## 3. The forest landscape

Human well-being has always been the result of benefits that the ecosystem provides it ([Power, 2010](#)). It is well known that different types of goods and services can be found that the forest ecosystem renders to the community. A purely economic distinction sees the forest ecosystem classified into 3 types: “timber based” (timber), “no timber based” (non timber) and “intangible” (intangible asset) ([Rizio and Gios, 2014](#)). Although the wood assortments are the main product obtainable from a forest surface, this does not imply that it represents, among all the externalities made available, the most important and fundamental form of use. Numerous functions are recognized to the forest ecosystem such as: “carbon capture, biodiversity conservation, the protection of aquifers and hydrogeological functions, the beauty of the natural landscape, enjoyed through forms of contingent use such as tourism and ecotourism, or, through contemplation and awareness of spiritual values” ([Rizio and Gios, 2014](#)). Coherently diversified can be the beneficiaries of these services depending on whether they are intended for the global/local community or for individuals / groups of individuals. Among the services to the community we certainly find carbon capture, playing an important role for the well-being of the planet. Among the aspects of the forest landscape, there is also considerable potential that the service rendered to relaxation and the need for silence that reflects an intrinsic relationship between nature, culture and local communities. The culture of the local communities of the mountain

areas represents a very important, unique and unrepeatable intangible heritage. Therefore the conservation of the main activities in the local communities, object of tourist destination, represents an added value to the service offered by the landscape condition. The natural surfaces that make up a landscape are subject to various activities that can damage or vice versa contribute to the conservation of what they represent. The relationship between common natural resources and sustainable tourism represents an essential combination for the development of mountain tourism. In fact, the forest landscape can perform various functions in the field of tourism and the natural area to which it is a background must be managed in such a way as to last over time. In order to be adequate, forest management must guarantee the flow of economic and eco-systemic utility for the local community through the production of goods and services that are economic in return. Such management must not only represent expenses inevitably incurred for the conservation and production of goods and services provided by natural areas but must be able to provide additional income for local populations. In the specific case of forest landscapes, the link between local populations and the forest involves a process of continuous transformation. This process is the result not only of physical interventions, but also of the socio-cultural context of the local populations, which, through their interpretation and appropriation of the traditions and customs handed down from generation to generation, have gradually shaped the forest landscape. Conservation and management of the forest landscape in a given community is often the expression of the link between that community and its surroundings. Forest management must be multifunctional, it must take the state of the forest as a public good in consideration of the fact that it must be able to provide local populations with sufficient products and services to be able to perceive that the intact natural surface represents a source of income. In light of these objectives, the appropriate tools to promote such management involves a mix of self-governance of public goods and the introduction of payment mechanisms (Rizio and Gios, 2014). Therefore, the forest landscape represents a container capable of generating goods and services that need a form of economic governance to guarantee both the expectations of the mountain communities (employment, income, etc.) and for those who travel from the plains and hills in these places to enjoy the natural and landscape beauties. In this perspective, economic sustainability appears an indispensable choice to guarantee man's permanence in the mountain territory.

#### 4. The stages of sustainable tourism

It is interesting to analyze how in a given area subject to tourism it can develop over time based on tourist use. In order to study the tourist impact Butler in 2006 divided the steps of the tourist flow, for a generalized area, into several sequential phases: exploration stage, the first phase of exploration in which the place of interest has not yet established itself as a tourist entity, is explored by a small group of individuals and does not, however, receive the flow of tourists due to the scarcity of accommodation facilities; involvement stage, phase of the involvement of local communities which, after becoming aware of the tourist potential of the area, begin to do their utmost for the establishment of structures suitable for tourist reception and for promoting the image of the locality in a marketing context; development stage, a phase that sees a development of tourism that begins to show loads on the locality as regards the quality of the tourist resort. This is due to a greater organization of tourism by stakeholders outside the locality and the growing human presence. This represents an important phase as it determines increases in the economy but also starts the process of environmental degradation that can occur in the event of overfishing; consolidation stage, which represents the phase of consolidation of the tourist flow which however continues to grow but with a reduced rate of increase compared to the previous phase. The tourist activity and the resulting economy becomes considerable for the country but degenerations also occur in the environmental context; stagnation stage,

corresponds to the stagnation phase of the tourist succession. Tourists from more distant areas, who would therefore be willing to spend a certain amount of money to reach the resort, lose their interest and prefer more. This is due to the fact that the tourist resort has reached the maximum number of visitors and therefore loses its attractiveness as a tourist destination. Only the flow of regular visitors remains and the need for regulatory intervention begins to be felt; decline stage, portrays the phase of decline in tourist traffic in which the importance of an intervention by the public operator becomes evident. Tourist demand is significantly lower due to competition with other destinations that compete with it and consequently also the tourist offer undergoes drastic decreases; rejuvenation stage, literally is the rejuvenation phase in which the intervention of the public operator can be used in the area of interest in order to maintain the tourist flow and respecting the tourist load capacities that the tourist destination can contain. This is achievable only if a controlled evolution oriented towards a stabilization of demand at levels compatible with medium and long-term strategies is realized, assuming development plans that contain the expansion phases and keep the attraction potential intact over time (Butler, 2006). The tourist carrying capacity is defined by the World Tourism Organization as "the maximum number of people who can visit a tourist destination, in the same period, without causing a destruction of the physical, economic and socio-cultural environment and an unacceptable reduction in the quality of the 'visitor experience'" (Mesa and Coccossis, 2004). Bimonte and Punzo (2005), and later Sauro (2013), describe it as: the capacity of the ecosystem; aesthetic and experiential ability; socio-economic capacity. By ecosystem capacity we mean the availability of natural resources in relation to anthropic use, that is, the relationship between the environmental impact of man and the area of interest; the aesthetic and experiential capacity represents the measure, that is the evaluation in quantitative terms, of the aesthetic and cultural satisfaction and of the expectations of the tourists who frequent the destination; socio-economic capacity represents the economic and social return of the population living in the tourist destination compared to the tourist use of the area in question (Sauro, 2013). Therefore, a mountain area of tourist destination is subject to several stages. Maintaining a long-term balance requires proper planning and the adoption of strategies aimed at defending the landscape and the mountain environment where various variables (both environmental and socio-economic) enter the objective function.

#### 5. Methodology

In order for the management of the mountain area to be economically sustainable in the long term, it must provide sufficient income for the local population without affecting the interests of future generations (Becchetti et al., 2010; Costanza et al., 1997). Effective mountain management requires that the production of those goods and services that form utility flows for an ecosystem and its local population be guaranteed. This management must be able to provide an income for local populations; can not only bear the costs inevitably incurred for the conservation and production of goods and services provided by activities that take place in the mountain area. In the specific case of mountain landscapes, the link between local populations and the forest involves a process of continuous transformation. This process is the result not only of physical interventions, but also of the socio-cultural background of the local populations, who, through their interpretation and appropriation of the traditions and customs handed down from generation to generation, have shaped the forest landscape making it unique and unrepeatable. This connection between local populations, the landscape and the forest environment is very important for mountain communities.

The conservation and management of the mountain landscape in a given community is often an expression of the connection between that community and the surrounding environment. Traditionally, the mountain environment was seen as hostile to human settlement; to

survive and carve out a life in the mountains, it was always felt that people were forced to adapt and make numerous compromises. Depending on these specificities, the legislator also provides for special forms (exemptions and/or concessions) for the payment of taxes. Multifunctional forest management takes into account multiple potential products and their sources of income. Indeed, one of the most important functions of adequate forest management in the mountains, in addition to obtaining raw materials, is the conservation of the landscape and natural resources as a background for recreational activities and the conservation of local social networks. Forest management in the mountains must be multifunctional, take into account the state of the forest as a public good and be able to provide local people with sufficient products and services to make them feel that the forest is a source of income. In light of these objectives, the appropriate tools to promote this management involve a mix of self-government of public goods and the introduction of payment mechanisms.

## 6. Results and discussions

The management of the mountain landscape is extremely complex. The management of public goods is never simple and is full of complexity (Pigou, 1924; Cozzi and Zamagni, 1999, Varian Hal, 2012). The management of public goods involving local communities raises the question of ownership of natural resource planning which implies a shared understanding of issues and methods for dealing with this issue.

This complexity increases when a resource has a wide range of uses, which sometimes generate conflicting demands and requirements, and involves a large number of institutions, management bodies and stakeholders. The forest is an example of such a situation. This multiplicity of uses is due both to the extraordinary importance of the landscape in terms of wildlife and the ecosystem in general, and to the numerous opportunities it offers to tourism. The forest performs at least two functions within the local tourist offer: it is both a good in its own right and a backdrop for carrying out recreational activities. Although these uses are undoubtedly potential sources of income for the local population, their conservation and maintenance also entail positive externalities and high costs.

This management is not facilitated by many stakeholders and other government bodies that gravitate to the territory. A possible solution to the problem could be the planning of self-governing bodies and institutions for these resources. However, the success of these management resources will depend on a number of factors: the clear delimitation of the limits of the boscat area, a satisfactory cost-benefit analysis, local regulations, the consent of the local population, the control mechanisms, sanctions and conflict resolution, and recognition of the right to self-organization and the imposition of sanctions.

The introduction of payment mechanisms is another solution; these constitute a direct source of income for local populations, simultaneously covering, at least in part, the costs incurred for the conservation and management of the forest resource. For most non-competing products, introducing clearing mechanisms is one of the best options; goods that are both rival and excludable, however, can probably be better managed through payment mechanisms. In the case of competing goods, the introduction of these mechanisms is to some extent limited by their level of exclusivity.

The management tools for congestive assets also depend on the level of exclusivity. On the one hand, adequate management tools for congestionable and non-excludable assets can vary from public compensation mechanisms to common property regimes; on the other hand, congestible assets - which can be excluded by non-EU members - can be managed by public or common property regimes. Finally, clearing and payment mechanisms can be implemented for goods that are both congestible and excludable.

The implementation of management tools for the forest, which, due to the specific characteristics of its service flows, must necessarily be complex, must also face further challenges due to the large number of

stakeholders involved in the governance system. It is therefore essential that the implementation of these management tools takes into account the particular characteristics of the local system.

A combination of management tools based on stakeholder involvement is potentially advantageous and, in some cases, mandatory, in order not only to protect but also to maximize the utility flows generated by these natural resources.

As a result, utility streams generated by the forest require a mix of management tools. The management of the mountain area should adopt a multifunctional approach in order to maximize the flows of services. This approach must recognize those assets that require a public management regime - such as the conservation of biodiversity, the protection of aquifers and the improvement of hydrogeological functions - and combine this regime with adequate payment mechanisms for tourism activities. These tourism activities can be based on the direct use of forests (use value), e.g. adventure parks and/or indirect or background use (scenic value or option) e.g. thematic itineraries. Activities such as hunting, fishing or harvesting of berries, truffles and mushrooms should follow common property management schemes for community members and payment mechanisms for non-EU members.

Limiting the availability of permits allows you to reward the forest management systems that manage and increase these resources and fully regulate their consumption, thus avoiding overexploitation. For service flows with more clearly definable market values (such as timber), payment mechanisms are the most appropriate management tool. Finally, for accommodation and restaurant activities, it is based on the market mechanism based on the supply and demand of services.

In this context, the foundations are created for the existence of resources which, if managed well, can represent a strategic success variable in the area. This aspect appears particularly important from an economic point of view. In fact, from the peculiarities of the mountain an offer of goods and services can be generated that allow the territory itself to compete and continue man's permanence. And yet the balanced development of the mountain's economic activities favors long-term growth paths as it prevents the onset of erosive phenomena that threaten the plains. In this perspective, the public operator has always had a particular regard to economic operators operating in these areas by providing tax exemption regimes as a function of the difficulties that mountain economic activities have compared to activities that take place in the plains and hills.

## 7. Conclusions

The resources of the mountain areas, with their positive externalities, could make human resources of great importance available to man. Given the dual advantage obtainable both at an ecosystem and economic level, to date, despite the expansion of sustainable tourism and the economies developed by the specific resources of the mountain areas, the political and managerial choices are still slow to be oriented as they should according to this bivalent importance. Since environmental goods represent public goods, their management has often proved inefficient. Sustainable tourism can be an effective management tool for natural resources. In fact, it guarantees benefits not only for the current generation but also for the future ones, and at the same time ensures high levels of quality of the landscape which is the main protagonist of tourism, and the latter, if sustainable, could be a prerequisite for competitiveness and economic recovery of the territory for the near future. In this work we have shown that the sustainable management of mountain areas through tourism requires an analysis of the various services or goods offered by the mountain economy and according to their specificity, a management-payment mechanism must be activated that involves the actors who are interested in the transaction. Ultimately, the economy of mountain areas needs an interaction with the activities that take place in the hills and on the plains. In fact, the destination of the products, others to local consumers, have as their outlet market the non-resident populations (think of dairy products, timber, etc.).

But tourism also needs consumers who come from other places (hills and plains) that with their movement determine the production of income streams for mountain populations.

The balanced development of the mountain territory, understood as the development of the three economic sectors with respect for the environment and natural resources, allows you to create long-term growth and development opportunities. In this context, the local communities, the legislator, the companies present in the area, should interact in order to protect the landscape, in so far as it creates the conditions for the development of economic activities and therefore also of tourism.

### Declaration of competing interest

The author report no relationships that could be construed as a conflict of interest.

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