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ECOTOURISM BREAKTHROUGH STRATEGY FOR DEVELOPING THE GOODS AND SERVICES ECO-SUSTAINABLE OF LOCAL COMMUNITIES FROM PROTECTED AREAS AND MAINTAINING THEM ON THE MARKET UNDER CLIMATE CHANGE IMPACT

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ABSTRACT

The PhD thesis presents a high degree of originality as it was less addressed both at the national and international level; we regard as a priority the interconnection between local communities in protected areas, ecotourism as an instrument of developing goods and services eco-sustainable and as a breakthrough strategy for maintaining them on the market under the climate change impact. Therefore, the proposed topic may have a significant contribution to the development of knowledge of ecotourism in local communities in protected areas in Romania and Italy.

Moreover, if there were some theoretical approaches in international scientific literature regarding this theme, the offered practical solutions were insignificant in numbers. Similarly, we can say that in Romania and Italy there is a dispersed interest for this problematic, but multidisciplinary approach and research coagulation and providing solutions efforts are missing. Therefore, new approaches and theories regarding ecotourism - as an instrument of developing goods and services eco-sustainable adapted to local communities in protected areas have been elaborated. Through this PhD thesis results, methods to identify the ways of applying ecotourism as breakthrough strategy for maintaining the goods and services eco-sustainable of local communities from protected area on the market under the climate change impact in Romania and Italy have been proposed. As innovative solutions an assessment model regarding the development of goods and services eco-sustainable of local communities within the protected areas through ecotourism and a flexible action plan to strengthen the adaptive capacity of Romanian and Italian local communities through ecotourism in protected areas to the impact of climate change, in order to maintain their goods and services eco-sustainable on the market, have been developed, which will be useful in economic policy making within the local community, covering several important directions, such as: the analysis of the position and the role of local communities from protected areas in developing eco-sustainable goods and services in economies; the research of the relations between local communities practicing ecotourism activities or with ecotourism potential and their external environment, in order to identify connections at micro and macroeconomic level; the identification of the influence of new elements related, mainly, to climate change and establishing its implications on local communities' development of goods and services eco-sustainable.

Keywords: ecotourism; local communities; protected areas; goods and services eco-sustainable; climate change

REZUMAT

Teza de doctorat prezintă un grad ridicat de originalitate, fiind mai puțin abordată atât la nivel național, cât și la nivel internațional; se are in vedere, cu prioritate, interconexiunea dintre comunitățile locale în ariile protejate protejate și ecoturismul, ca instrument de dezvoltare a bunurilor și serviciilor eco-sustenabile, dar și ca o strategie inovativă pentru menținerea lor pe piață în contextul impactului schimbărilor climatice. In acest context, tema propusă poate avea o contribuție semnificativă la dezvoltarea cunoștințelor despre ecoturism în comunitățile locale din ariile protejate din România și Italia. Mai mult, dacă unele abordări teoretice în literatura științifică internațională cu privire la această temă au mai existat, soluțiile practice oferite au fost nesemnificative ca număr. În mod similar, se poate afirma că în România și Italia există un interes dispersat pentru această problematică, dar abordări multidisciplinare și încercări de coagulare a cercetărilor și oferire de soluții lipsesc. Prin urmare, s-au elaborat noi abordări și teorii cu privire la ecoturism - ca instrument de dezvoltare a bunurilor și serviciilor eco-sustenabile - adaptate comunităților locale din ariile protejate. Printre contribuțiile acestei teze de doctorat, se pot menționa metodele de identificare a modului de aplicare a ecoturismului ca strategie inovativă de menținere pe piață a bunurilor și serviciilor eco-sustenabile ale comunităților locale din ariile protejate din România și Italia, în contextul impactului schimbărilor climatice.

Au fost elaborate, ca soluții inovative - un model de evaluare a dezvoltării bunurilor și serviciilor eco-sustenabile a comunităților locale din ariile protejate prin ecoturism dar și un plan flexibil de acțiuni pentru consolidarea capacității de adaptare a comunităților locale din ariile protejate românești și italiene pentru a-și menține bunurile și serviciile eco-sustenabile pe piață prin ecoturism sub impactul schimbările climatice - care vor fi utile în elaborarea politicilor economice în cadrul comunității locale, acoperind câteva direcții importante, precum: analiza poziției și rolul comunităților locale din ariile protejate în dezvoltarea de bunuri și servicii eco-sustenabile în economie; cercetarea relațiilor dintre comunitățile locale care practică activități ecoturistice sau cu potențial ecoturistic și mediul lor extern, pentru a identifica conexiunile la nivel micro și macroeconomic; identificarea influenței noilor elemente legate, în principal, de schimbările climatice și stabilirea impactului acestora asupra dezvoltării bunurilor și serviciilor eco-sustenabile de către comunitățile locale.

Cuvinte cheie: ecoturism; comunități locale; arii protejate; bunuri și servicii eco-sustenabile; schimbări climatice

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LIST OF ABBREVIATIONS

1. TIES - The International Ecotourism Society
2. IUCN - The International Union for Conservation of Nature
3. UNWTO - The United Nation World Tourism Organization
4. NGOs - Non-Government Organizations
5. IGP/PGI - Indicazione Geografica Protetta/Protected Geographical Indication
6. DOP/ PDO - Denominazione di Origine Protetta/Protected Denomination of Origin
7. RRA - Rapid Rural Appraisal
8. PRA - Participatory Rural Appraisal
9. CI - The Conservation International
10. TNC - The Natural Conservancy
11. SCP - Site Conservation Planning
12. NPSM - National Park of Sibillini Mountains
13. CO2 - Carbon Dioxide
14. NASA - The National Aeronautics and Space Administration
15. IPCC - Intergovernmental Panel on Climate Change
16. UN - United Nations
17. SGDs - The Sustainable Development Goals
18. WHC - UNESCO World Heritage Centre
19. ICAO - The International Civil Aviation Organization
20. WSDI - Warm Spell Duration Index
21. WTO - World Trade Organization
22. BC - Before Christ
23. UNESCO - United Nations Educational, Scientific and Cultural Organizations
24. OECD - Organization for Economic Co-operation and Development
25. UNCTAD - United Nations Conference on Trade and Development
26. FAO - Food and Agriculture Organization
27. UNEP - United Nation Environmental Programme
28. UNFCC - United Nations Framework Convention on Climate Change
29. ISTAT - Istituto Nazionale di Statistica/National Statistic Istitute

INTRODUCTION

Introduction with problem definition

Climate change, environment deterioration and continual loss of biodiversity have the potential to generate an increasingly higher number of disturbances and shocks in the areas that are highly dependent on natural resources (De Urioste et al., 2015), meaning in the areas that are dedicated „to the protection and maintenance of biological diversity, natural resources and associated cultural resources, that are managed through legal means" (Strickland-Munro et al., 2010). The local communities of these protected areas are exclusively dependent on the environment in which they live. The more this environment is affected by climate changes – whose consequences include in Central, South and South-Eastern Europe, heat waves, drought, floods and forest fires – the more the welfare of local communities is affected.

In many communities from protected areas, ecotourism is seen as a solution for reconciling development and sustainability (Heng Zhang et al., 2012). Since it implies the development of goods and services eco-sustainable of local communities from protected areas, the low level of resource consumption, the use of not-motorized transportation (walking, hiking and cycling) and the protection of the natural heritage, ecotourism may also prove as a solution for reducing the impact of climate change (Buzinde et al., 2010). Even after local communities understand the importance of sustainable development and the need to manage climate change, ecotourism plays a key role in maintaining the goods and services eco-sustainable on the market and in acknowledging the need to use non-invasive or environmentally friendly practices.

In this context, assessing the degree to which ecotourism is seen as an instrument of developing the goods and services eco-sustainable of local communities from protected areas may offer a comprehensive image on the public policies and private initiatives that might be implemented in order to maintain goods and services eco-sustainable of local communities from protected areas on the market under the climate change impact.

Objectives and research methodology

Tourism in protected areas is included today among the most popular and appreciated forms of travel due to the advantages seen both from the perspective of sustainable development and the satisfaction of tourists. Undoubtedly, the excessive development of tourism in protected areas can have a negative impact on the environment of local communities, which is why new scientific sustainable approach is needed. In this context, the development of eco-sustainable

goods and services through ecotourism, implemented inside and outside the protected areas, ensures not only a salient sustainable management of the resources / attractions and visitors but also a positive impact on the surrounding and wider areas, on the regions to which they are integrated.

By underpinning sustainability, the development of goods and services through ecotourism in protected areas is a step forward in increasing the well-being of local communities by supporting all the components of the environment. In this context, a balance is established between all the social, cultural, environmental and economic elements of local communities, aiming at economic development and quality of life at the general level as well as increasing the competitiveness of protected areas from the tourism sector perspective.

Therefore, the research objective of the thesis - assessment of the present stage of ecotourism as an instrument of developing goods and services eco-sustainable of local communities from protected areas - focuses on ecotourism as one of the main instruments of sustainable development of goods and services in protected areas that integrates the more general concerns of harmonizing seemingly conflicting interests between the economy and communities local economic growth, social protection and preservation of the environment, ecotourism and other activities carried out within a protected area etc. Therefore, it will be selected and analyzed, from the vast problematic area of the ecotourism sustainability implementation in the local communities in the protected areas, the defining aspects regarding the necessity and the appropriateness of this orientation, highlighting the specific issues, advantages and disadvantages related to the development of eco - sustainable goods and services through ecotourism.

A salient objective of the research - elaborating an assessment model regarding the development of goods and services eco-sustainable of local communities within the protected areas through ecotourism - is focused on elaborating a comprehensive and accurate evaluation of the eco-sustainable goods and services development's opportunities through ecotourism in local communities in protected areas and on elaborating the evaluation model. This approach is necessary for local communities to finalize their own strategies for the development of eco-sustainable goods and services within a sustainable market plan, starting from the premises of the need for a balance between exploitation and conservation of natural and anthropic resources.

The scientific approach will be based on the preliminary analysis of the selected destinations following the application of the selection criteria of the local communities in the protected areas with ecotourism experience. In this context, based on the specialized literature on the evaluation of tourism resources and other factors for determining the ecotourism potential of local communities, the selection criteria will be adopted in order to identify the representative

destination. The latter will be the subject to a SWOT analysis, which represents the basis for the evaluation model. More, an analysis will be developed in order to allow a holistic view of the similarities in local community residents' attitudes and intents in developing eco-sustainable goods and services through ecotourism. For establishing the implementation stages and the key indicators in starting and carrying out such a process, a field research will be conducted to identify and understand the position of residents towards the use of ecotourism as a tool for balancing environmental conservation with the development of eco-sustainable goods and services, by interviewing members of selected local community. The approach continues with the elaboration of a set of specific indicators for assessing the stage of the eco-sustainable goods and services development through ecotourism based on the interpretation of the obtained results, which is necessary for an integrated ecotourism management, for the prevention of the degradation of natural habitats and cultural and traditional values of local communities.

More, it will be developed the architecture of an evaluation model for local communities within protected areas from the perspective of eco-sustainable goods and services development through ecotourism. It will be formulated objectives, established implementation phases and operations that justify the appropriateness of such an approach under the rapport natural resources - development of eco-sustainable goods and services through ecotourism and will be set up, by applying the developed model, the premises of implementing an ecotourism development project based on identified needs and correlated with the information obtained from the undertaken researches.

Generally, it is essential to evaluate how climate change will influence ecotourism system in local communities from protected areas and how it will connect and increase the impacts of other pressures, like natural disasters, pollution, natural resource extinction and economic crises and recessions. Worldwide, there are more than 160 000 protected areas, which represent salient ecotourism venues. Since ecotourism is influenced by weather and climate conditions and the quality of natural environment of the protected areas - such as landscapes, wild flora and fauna, water resources etc. – climate changes represent an important issue (Scott et. al, 2019). Climate changes might have negative impacts on the general satisfaction and the travel experience of tourists, lengths of tourism seasons, natural and anthropic tourism attractions, general and specific tourism infrastructure and sustainability of tourism businesses (Denstadli, Jacobsen & Lohmann, 2011). Despite the globally destructing effects of climate change impacts on tourism destinations, limited research was conducted on this issue. Moreover, research addressing the climate change impact on sensitive destinations such us protected areas in Europe, and especially in Italy, is almost inexistent. To fill this gap, another research objective will aim the vulnerability assessment of

ecotourism businesses under climate change impact in the National Park of Sibillini Mountains. In particular, the research responds on the following questions: Which are the climate change impacts in the national park?; In which way these impacts affect the environmental and socio-economic dimensions of the ecotourism in the protected area?; Which are the climate change adaptation measures implemented by park's management?; Does sustainable management of protected area diminishes the vulnerability of ecotourism under climate change?.

The final objective of the PhD thesis - elaborating an action plan to increase the adaptive capacity of Romanian and Italian local communities through ecotourism in protected areas to climate change impact - it will be reiterate the idea that the ecotourism industry can be a solution in the process of adaptation to climate change, but also the need for a critical, holistic, integrative vision that, through awareness and empowerment of local communities and their partners, creates opportunities for sustainable economic growth, environmental protection and adaptation to climate change. The action plan integrates guidelines and adaptive operational management tools at local communities' level in order to understand the importance to relate to climate change in the development of ecotourism. The approach continues with the design of an architecture that integrate ecotourism development adaptation measures to climate change impact in tourism policies, which should address specific objectives included in the socio-cultural, economic and environmental structure of local communities.

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PART I: CURRENT STATE OF KNOWLEDGE IN RESEARCH DESIGN

LITERATURE REVIEW

The ecotourism terms can be recognised when Hetzer (1965)[1] identified four 'pillars' or principles of responsible tourism: *"minimizing environmental impacts, respecting host cultures, maximizing the benefits to local people, and maximizing tourist satisfaction".* Additionally, Miller (1978)[2] referred to the ecotourism during an own planning work in the National Park for eco-development in Latin America.

Much of the terms have been launched to define the ecotourism concept, which can be mentioned to as nature travel, tourism focused on nature, nature–based tourism, eco- sustainable tourism, alternative to mass tourism and distinctive attention tourism (Laarman & Durst, 1987[3]; Durst & Ingram, 1988[4]; Wilson & Laarman, 1988[5]; Valentine, 1992[6]; Hall & Weiler, 1992[7]; Diamantis, 1998a[8]).

The first official ecotourism definition is attributable to Ceballos-Lascurain (1987)[9], when he give a meaning of ecotourism as *"… Travelling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas".*

The ecotourism concept became common when the mass tourism, that it was based on economic benefit and evolution, had the negative community and environmental impact, rather than environmental conservation and socio-cultural objective of local communities (Ziffer, 1989)[10].

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[1] Hetzer, W. (1965). Environment, tourism, culture. *Links July*, pp. 1–3.

[2] Miller, K., (1978), *Planning National Parks for Eco development: Methods and Cases from Latin America*. University of Michigan, Ann Arbor.

[3] Laarman, J.G. and Durst, P. B. (1987). Nature travel in the tropics. *Journal of Forestry*, Vol. 85, No. 5, pp. 43–46.

[4] Durst, P.B. and Ingram, C. D. (1988). Nature- orientated tourism promotion by developing countries. *Tourism Management*, Vol. 9, No 1, pp. 39–43.

[5] Wilson, M.A. and Laarman, J.G. (1988). Nature tourism and enterprise development in Ecuador. *World Leisure and Recreation*, Vol. 29/30, No. 1, pp. 22–27.

[6] Valentine, P.S. (1992). Review: *Nature-based tourism*. In B. Weiler and C.M. Hall (Eds) Special Interest Tourism. London: Belhaven Press, pp. 105-127

[7] Hall, C.M. and Weiler, B. (1992). Introduction. What's special about special interesttourism?. In B.Weiler and C.M. Hall (Eds) *Special Interest Tourism* (pp. 1-14). London: Belhaven Press.

[8] Diamantis, D., (1998a), *Ecotourism: Characteristics and involvement patterns of its in the United Kingdom*. PhD dissertation, Bournemouth University, UK.

[9] Ceballos-Lascuráin, H. (1987). The future of ecotourism. *Mexico Journal January*, pp. 13–14.

[10] Ziffer, K. A., (1989)., *Ecotourism: The uneasy alliance*. Washington D.C.: Conservation International.

There is a large volume of published studies describing the role of ecotourism associating only with the sustainable development concept. For this reasons, Boo (1990)[11] tended to draw attention to nature-based experience seek out by tourists. Moreover, the Ecotourism Society (1991 a, b)[12] defined ecotourism as "*Responsible travel to natural areas which conserves the environmental and improves the well-being of local people*". On the same way, Ecotourism Association of Australia (1992)[13], demarcated that ecotourism is "*Ecologically sustainable tourism that fosters environmental and cultural understanding, appreciation and conservation*".

According to Valentine (1992),[14] the tourism in protected areas can be interpreted as *'primarily concerned with the direct enjoyment of some relatively undisturbed phenomenon of nature'.* Furthermore, Tickell (1994)[15], defined ecotourism as *"Travel to enjoy the world's amazing diversity of natural life and human culture without causing damage to either".*

Boyd & Butler, (1993[16], 1996a[17]), defined the concept of ecotourism "*A responsible nature travel experience, that contributes to the conservation of the ecosystem while respecting the integrity of host communities and, where possible, ensuring that activities are complementary, or at least compatible, with existing resource-based uses present at the ecosystem".*

As noted by Wall (1994)[18], tourism in protected areas has been described based on three distinct factors: destination quality, tourists' motivation, and ecotourism experiences. Moreover, Ross and Wall (1999)[19] delineated five essential determinants of ecotourism: (i) protection of protected areas; (ii) knowledge; (iii) incomes; (iv) specific segment of tourism; and (v) participation of local communities.

Others author, such as Sirakaya, Sasidharan, and Sonmez (1999)[20] demarcated the ecotourism concept as a new form of tourism that does not use resources, is instructive,

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[11] Boo, E. (1990). Ecotourism: the Potentials and Pitfalls. *WorldWide Fund for Nature*, Washington, DC, Vols. 1 and 2.

[12] The Ecotourism Society, (1991a), *The Ecotourism Society Newsletter Number 1, spring and The Ecotourism Society (1991b) Ecotourism Guidelines for Nature-Based Tour Operators*. The Ecotourism Society, North Bennington, Vermont.

[13] Ecotourism Association of Australia, (1992), *Newsletter 1, 2.*

[14] Valentine, P.S. (1992a). Review. Nature-based tourism. In: Weiler, B. and Hall, C.M. (Eds) *Special Interest Tourism* (pp. 105–128). Belhaven Press, London.

[15] Tickell, C. (1994). Foreword. In: Cater, E. and Lowman, G. (Eds) *Ecotourism: a Sustainable Option?* (pp. ix–x). John Wiley & Sons, Brisbane.

[16] Boyd, S.W. and Butler, R.W., (1993), *Review of the Development of Ecotourism with Respect to Identifying Criteria for Ecotourism for Northern Ontario*. Report for Department of Natural Resource/ Foresty, Ministry of Natura 1 Resources. Sault Ste, Marie, Ontario, Canada.

[17] Boyd, S.W. and Butler, R.W. (1996a). *Seeing the forest through the trees using geographical information systems to identify potential ecotourism sites in Northern Ontario, Canada*. In L.C. Harrison and W. Husbands (eds) *Practicing Responsible Tourism: International Case Studies in Tourism Planning, Policy and Development* (pp. 380–403). Chichester: John Wiley & Sons.

[18] Wall, G. (1994), "Ecotourism: Old wine in new bottles?", *Trends*, Vol. 3, No. 2, pp. 4–9.

[19] Ross, S. and Wall, G. (1999). Ecotourism: towards congruence between theory and practice. *Tourism Management*, Vol. 20, pp. 123–132.

[20] Sirakaya, E., Sasidharan, V., & Sonmez, S. (1999). Redefining ecotourism: the need for a supply-side view. *Journal of Travel Research*, Vol. 2, pp. 168e172.

adventurous and focuses on visiting of diversity type of attractive such as nature, culture, and historic zone. On the same way, Weaver (2001)[21] has defined ecotourism *"Ecotourism is a form of tourism that fosters learning experiences and appreciation of the natural environment, or some component thereof, within its associated cultural context'".*

Additionally, Alias et al. (2015)[22] defined ecotourism as a form of tourism that focused on activities in protected areas with the aim of preserving the environment.

In recent years, there has been an increasing amount of literature on ecotourism definitions (Fennel, 2003)[23]. Many authors Mayaka and Prasad (2012)[24], Liu et al. (2013)[25], Lenao and Basupi (2016)[26] defines the ecotourism as a new form of tourism that is not based on a consumable resource, but it is focused on educational and adventurous character. Moreover, Sampad, K. S. (2013)[27], defined the ecotourism as *"… a form of tourism that generally involves visiting to fragile, pristine and protected areas. The activities of ecotourism have low negative impact on the ecology and it is often a small scale alternative form of tourism as against mass tourism".* In addition, Matei (2006)[28] highlighted that the ecotourism can be defined in any trip to the isolated natural areas for enriching the understanding and appreciation of the ecological and cultural heritage, without causing their deterioration.

Up to now, Das and Chatterjee (2015)[29] have used a content analysis method to review journal articles on ecotourism published among 2000 – 2013 in order to define the ecotourism as an effective environmental conservation tool in many protected areas. In addition, Fennel (2010)[30] used a content analysis method to examination of 85 definitions of ecotourism for discovering the variables most frequently cited in the ecotourism definitions that are conservation, culture, benefits to locals and education.

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[21] Weaver, D.B., (2001), *Ecotourism*. John Wiley & Sons: Milton.

[22] Alias, A., Aziz, A., Kirim, M.S.A., Isa, S.S. (2015). Local Food Consumption at Ecotourism Destination. *In Adventure and Ecotourism in Malaysia, Chapter: 3*. Publisher: Faculty of Forestry, pp. 40-45.

[23] Fennell, D. A. (2003). *Ecotourism: An introduction (2nd Ed.).* London: Routledge.

[24] Mayaka, M.A., Prasad, H. (2012). Tourism in Kenya: an analysis of strategic issues and challenges. *Tour. Manag. Perspect*, Vol. 1, pp- 48–56.

[25] Liu, C., Li, J., Pechacek, P. (2013). Current trends of ecotourism in China's nature reserves: a review of the Chinese literature. *Tour. Manag. Perspect*, Vol. 7, pp. 16–24.

[26] Lenao, M., Basupi, B. (2016). Ecotourism development and female empowerment in Botswana: a review. *Tour. Manag. Perspect*, Vol. 18, pp. 51–58.

[27] Sampad, K. S., (2013), *Ecotourism*. Pondicherry University, India, p. 89.

[28] Matei, E., (2006), Ecotourism. Colectia Geografie Bucaresti, p. 53.

[29] Das, M. &Chatterjee, B. (2015). Ecotourism: a panacea or a predicament*?. Tourism management perspectives*, Vol. 14, pp. 3-16.

[30] Fennel, D. A. (2010). A content analysis of Ecotourism destination. *Current Issues in Tourism*, Vol. 4, pp. 403-421.

Thus far, Allcock et al. (1994)[31] *"Ecotourism is nature-based tourism that involves education and interpretation of the natural environment and is managed to be ecologically sustainable".* Furthermore, the authors highlighted that this explanation recognizes that *"'natural environment' includes cultural components and that 'ecologically sustainable' involves an appropriate return to the local community and long-term conservation of the resource".*

Others authors Bran, F. et al. (2000)[32] described ecotourism as: "*... more than books and albums about wildlife, binoculars, more than folk art that is displayed on hotels` walls and restaurants but in fact is a constant struggle to protect landscapes, with supporting peoples` cultural heritage*".

In the last few decades, "eco/ecological tourism", as a new form of tourism, and the "mass tourism" antithesis, is recognized widely by politicians and planners as a potential efficient tool to improve the livelihood of local people and support the environment (Brooks, Franzen, Holmes, Grote, & Borgerhoff, 2006)[33].

As noted by Goodwin (1996)[34], ecotourism is "*Low impact nature tourism which contributes to the maintenance of species and habitats either directly through a contribution to conservation and/or indirectly by providing revenue to the local community sufficient for local people, and therefore protect, their wildlife heritage area as a source of income."*

In other words, ecotourism is an alternative approach and aims to protect natural resources, especially biological diversity; promote the sustainable use of resources; the creation of ecological experience and environmental awareness for tourists and, at the same time, protect and respect the natural and cultural heritage of destinations, benefit the local communities and put them at the centre of development and planning processes (Fennell, 2001)[35].

Since it implies the development of goods and services eco-sustainable of local communities from protected areas, the low level of resource consumption, the use of not-motorized transportation (walking, hiking and cycling) and the protection of the natural heritage, ecotourism may also prove a solution for reducing the impact of climate change (Buzinde et al., 2010)[36].

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[31] Allcock, A., Jones, B., Lane, S. and Grant, J., (1994), *National Ecotourism Strategy*. Commonwealth Department of Tourism, Australian Government Publishing Service, Canberra.

[32] Bran, F., Simon, T., Nistoreanu, P., (2000), *Ecoturism.* Editura Economică, București.

[33] Brookes, J.S., Franzen, M.A., Holmes, C.M., Grote, M.N., Mulder, M.B. (2006). Testing Hypotheses for the success of different conservation strategies. Consev. Biol., Vol. 20, No. 5, pp1528-1538.

[34] Goodwin, H. (1996). In pursu it of ecotourism. *Bio diversity and Conservation,* Vol. 5, No.3, pp. 277–291.

[35] Fennell, D. A. (2001). A content analysis of ecotourism definitions. *Current Issues in Tourism*, Vol. 5, pp. 403–421.

[36] Buzinde, C.N., Navarrette, D.M., Morais, D. (2010). Tourists' Perceptions in a climate change: Eroding Destination. *Annals of tourism Research*, Vol. 52, No.2, pp. 333-354.

The aim of ecotourism is to protect natural areas through production of income, environmental education and the involvement of local communities (Ross & Wall, 1999)[37]. There is a relatively small body of literature that is concerned on the use of ecotourism as a strategy to develop good and service eco-sustainable. However, Stronza (2007)[38] highlighted that tourism in protected areas could be an essential tool to conservation of natural resource and local communities' improvement. On the same way, (Bookbinder et al., 1998[39]; Giannecchini, 1993[40]; Gossling, 1999[41]; King & Stewart, 1996[42]) promoted ecotourism as a tool to conserve environment, development local communities and source of income. Indeed, ecotourism can be generate an economic benefit to many rural communities that are stimulated by promise of occupations, ability improvement, and new business activities (IUCN, 2012)[43].

Ecotourism is based on the concept that the ecological environment creates a local resource that produces economic value by attracting tourists. (Björk, 2000[44], Chiu et al., 2014[45], Cobbinah, 2015[46]). One study by Weaver & Lawton (2017)[47] highlighted how ecotourism can be an opportunity and can be useful to increases management and monitoring accordingly with the motivation and mobilization of visitors within a protected area.

Besides, to promote conservation, it can often provide a sustainable means for generating local communities' income without compromising, or with a manageable impact on, ecosystem conservation (Christ, 2003)[48]. Moreover, it has a many positive contributes such as conservation

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of species in danger of extinction (Steven et al, 2013[49] & Santarem et al, 2015[50]) and preserve the cultural heritage (Nepal, 2004)[51].

In relation to the environment conservation, Jamal et al. (2008)[52] & Hornoiu (2014)[53] identified ecotourism as a market tool in order to preserve territory. Moreover, it development can be an alternative to exploitative usage of natural resources (Beaumont, 2001[54]; Byrne, Staubo, & Grootenhuis, 1996[55]; Weaver, 2000[56]; Wilkie & Carpenter, 1999[57]). Furthermore, Richardson (1993)[58] argued that tourism in protected areas interprets environment, local cultural values, and preserve nature. Some writers (e.g., Honey, 2008)[59] have analysed the promotion of cultural preserve, and respect for local culture. Additionally, the Australian Department of tourism (1994)[60] underlined that ecotourism comprises education and interpretation of the environment that it must be managed in order to be eco sustainable.

Ecotourism is identified as a stimulating source of economic benefits for local communities in protected areas. As noted by Taylor et al. (2002)[61], ecotourism is an opportunity for stimulating local communities to create eco sustainable goods and services in order to increase tourism and, consequently, they increase local incomes and improve conservation of environmental.

[49] Steven, R., Castley, J.G., Buckley, R. (2013). Tourism revenues as a conservation tool for threatened birds in protected areas. *PLoS One 8*, Vol. 5.

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Also, ecotourism assurances that the sustainable goods and services consumption generates, through ecotourism business, income to local communities (Farrell & Runyan 1991[62]; Bhattacharya, Chowdhury and Sarkar, 2011[63], Felicetti, 2017[64]).

According to Patterson (2002)[65], an ecotourism business that develop eco-sustainable goods and services must be these characteristics:

- Low impact on a protected area;
- Implicate of stakeholders in the forecasting, growth, application and checking phases;
- Regulates of tourists to areas;
- Finance the conservation groups' work in order to preserve the protected area;
- Directs tourists on the areas to be visited;
- Employs local people and buys local product.
- Identifies that nature environmental is an essential component to the tourist experience;
- Guide are essential to know or interpreter natural environmental;
- Guarantees that wildlife is not stressed;
- Respects of the local and traditional cultures.

Additionally, Lee (2008)[66] noted local communities could develop goods and services eco-sustainable when they have favourable perceptions regarding territory preservation and economic benefits produced by ecotourism. Moreover, the local communities are key actors for developing eco-sustainable goods and services through ecotourism (Backman and Munanura 2015[67]; Felicetti 2018[68]) and its management by local communities can be influence the ecotourism growth (Marulo 2012)[69].

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[63] Bhattacharya, D., Chowdhury, B. and Sarkar, R. (2011), "Irresponsıble Ecotourısm Practıces Flankıng the Best Natıonal Park in Indıa: A Multıvarıate Analysıs", *2nd Internatıonal Conference on Busıness and Economıc Research (2nd Icber 2011) Proceedıng*, pp. 1901- 1928.

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According to Byrd (2007)[70], ecotourism have to developed, planned and managed in a sustainable way whereas integrating the local communities in the entire process. Moreover, community participation could put in evidence the capacity of local communities to influence the result of the whole development process that has an economic impact on local communities themselves (Larsen & Wearing, 1994)[71].

The direct and indirect incentives from ecotourism development could help improve the attitude in the direction of preservation (Stem, Lassoie, Lee, Deshler, & Schelhas, 2003[72]; Walpole & Goodwin, 2001[73]) and generate economic benefits for local people. Moreover, tourism in protected areas can provide direct incentives to the local communities (Nyaupane & Poudel, 2011[74]) that have the possibility to sell eco sustainable goods and services to tourists (Ashley, 2000[75]; Cattarinich, 2001[76]; Scheyvens, 2007[77]). Moreover, many case studies have underlined that many economic incomes remain at the local community's level (Dimanche & Smith, 1996[78]; Harvey & Hoare, 1995[79]). In addition, the development of eco sustainable goods and services can help maximize the relationships between supply and demand and minimize loss (Ollenburg & Buckley, 2007[80]).

According to Hjalager and Johansen (2012)[81], sustainability through develop goods and services in protected areas could be an income possibilities and provide high quality of local products that intrigue to tourists to make a culinary experiences. In particular, the types of local products offered can be influence tourists' reason when they choose protected areas (Cohen &

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Avieli, 2004)[82]. Consequently, it is relevant to put emphasis on eco sustainable goods and services accessible in order to promote an ecotourism destination because it could be an important value added for the destination themselves (Alias et al., 2015)[83].

Ecotourism principle is carried out economic benefits to local communities, principally people living in protected areas (Page & Dowling, 2002[84]; TIES, 2013[85]). In order to maximize economic benefits, it supporters for the promotion of recycling, energy efficiency, water conservation, and the formation of profitable opportunities for local communities (Randall, 1987)[86]. Besides, social advocates due to its potential to create social benefits for all, improves the lives of vulnerable groups, and empower local communities (Scheyvens, 1999)[87].

In general, the advantage of eco sustainable goods and services consumption is that it support to maintain of the local business activities and sustain local communities, and also the money spent hang around in the local communities. Moreover, it reduces eco sustainable products miles consequently dropping use of fossil fuel and decreases air pollution. Therefore, tourists increase benefits from local products where the consumption is connected with healthier eco sustainable goods and services choices and better understanding of them through dialogues with local producers (Brain, 2012)[88].

Obviously, the eco sustainable goods and services are produced by local communities at an ecotourism destination have implications not only to the local income, but also to the local culture and safeguarding the environmental sustainability of the ecotourism destinations. This would give benefit to the tourists and local community (Sims, 2009)[89].

Eco-tourism should be promoted in order to increase environmental consciousness and stimulate local communities to be involved in policy-making. Moreover, during the development strategy they should consider local tradition and cultural knowledge (UNWTO-UNEP-WMO, 2008)[90].

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In many local communities from protected areas, ecotourism is seen as a solution for reconciling development and sustainability (Coria et al., 2012[91]; Heng Zhang et al., 2012[92]). On one hand, the local communities are central actors of tourism in protected areas and an insightful understanding of their attitudes is important to achieve the development of eco-sustainable goods and services. On the other hand, the local communities are influenced by protected areas and associated tourism both directly and indirectly through its existence and capacity to attract tourists. In addition, local communities generates new sources of environment conservation, and reinforce or revive traditional culture and lifeway (Butler & Hinch, 2007[93]; Honey, 2008[94]; Zeppel, 2006[95]). For this reason, it is necessary that the local people invests in eco-sustainable goods and services (Öztürk, 2015)[96].

As an example of good practice is the local community of Capirona in the Amazon Region, Ecuador that, besides to the traditional trip in protected areas, have organized to visitors a presentation of traditional songs, a tour guide to the local theatre, an exposition of traditional handcrafts of the local areas and a taste the local foods (Wesche & Drumm, 1999)[97].

The local communities of these protected areas are exclusively dependent on the environment in which they live. The more this environment is affected by climate changes – whose consequences include in Central, South and South-Eastern Europe, heat waves, drought, floods and forest fires – the more the welfare of local communities is affected.

During the twentieth century, temperature has increased by 0.6°C (IPCC, 2007)[98]. Additionally, many studies regarding climate change showed that, in twenty-fist century, they increase at a bewildering rate (Solomon et al., 2007)[99]. Despite the reduction of CO2 emission,

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[99] Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K. B., et al., (2007), *Contribution of working group I to the fourth assessment report of the intergovernmental panel on climate change*. Cambridge, United Kingdom and New York: Cambridge University Press.

occurred in twenty-fist century, this global warming continues to increase and temperature rise a further 0.3-1.7°C (IPCC, 2014)[100].

There is growing evidence that biodiversity and ecosystem functions are influenced by climate change and that species ranges are shifting (McCarthy et al., 2001[101]; Parmesan and Yohe, 2003[102]). Climate change, environment deterioration and continual loss of biodiversity have the potential to generate an increasingly higher number of disturbances and shocks in the areas that are highly dependent on natural resources (De Urioste et al., 2015)[103], meaning in the areas that are dedicated *„to the protection and maintenance of biological diversity, natural resources and associated cultural resources, that are managed through legal means"* (IUCN, 1994, cited in Strickland-Munro et al, 2010)[104].

In the years, relevant changes in temperature and precipitation generated by climate change had completely transformed several activity of the national parks. For example, melting glaciers caused by temperature rise (Brugman, Raistrick, & Pietroniro, 1997[105]; Hall & Fagre, 2003[106]), change of vegetation, decrease of natural habitants in protected areas, and species extinction (Cumming & Burton, 1996[107]; Halpin, 1994[108]; Scott, Malcolm, & Lemieux, 2002[109]). Furthermore, besides being a threat to ecosystem and landscape, climate change is a crucial threat to cultural heritage (Liu, 2016)[110] and it has a potential for changing the tourism seasons (Buckley & Foushee, 2012)[111].

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According to Scott et al. (2007)[112], climate change impacts generate physical changes to protected areas that provide the basis for ecotourism.

Ecotourism depends on climatic conditions and natural resource, such as water resource, biodiversity, and wildlife (Scott, Jones & Konopek, 2007)[113]. Moreover, in ecotourism destination, climate change can affect the quality of -tourist's experience and satisfaction; - natural resources; and – tourism facilities and activities sustainability (Jones & Scoot, 2006[114]; Smith, 1993[115]). In specific, business activities from protected areas based on tourism, can be influenced by weather and climate. Underlined that weather consist of the short-term atmospheric changes whilst climate consist of the long-term changes of weather (Gutro, 2005)[116].

In addition to influencing ecotourism, climate change could affect local communities and business activity inside the protected areas in different ways, for example, decrease in agricultural production, change land to cultivate, seasons change (Dumenu & Obeng, 2016)[117]. In addition, these changes can threaten cultural traditions of local communities (Adger et al., 2013)[118].

The salient aspect regarding ecotourism destination is how local communities and business activities in the protected areas react under climate change impact. Businesses activities in ecotourism destinations are vulnerable at climate change impacts because they are based on natural resources attractions and tourism specific infrastructures that can be sensitive to climate change (Becken & Job, 2014)[119].

For this reasons, ecotourism destinations have to assess the vulnerability. Vulnerability assessment is an integrate approach for analysing in what way present and future climate change impact can be affects a destination (Kelly & Adger, 2000)[120]. However, the vulnerability of ecotourism destination is not only affected by climate change, but it can be influenced by various

[112] Scott, D., Jones, B., & Konopek, J. (2007). Implications of climate and environmental change for nature-based tourism in the Canadian Rocky Mountains: A case study of Waterton Lakes National Park. *Tourism Management*, Vol. 28, No.2, pp. 570-579.
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economic, institutional, social, and physical characteristic (Fussel & Klein, 2006[121]; Ritchie, 2009[122]).

According to IPCC (2001),[123] the vulnerability to climate change: *"is the degree to which a system is susceptible to and unable to cope with, adverse effects of climate change, including climate variability and extremes".*

The approach in order to assess vulnerability advised by IPCC (2001) focuses on three dimensions:

- Exposure refers to the degree and nature of a system being exposed to significant climate change (IPCC, 2001).
- Sensitivity refers to the degree of a system that can be affects by, or inclusive to climate stimuli (Smith, Burton, Klein, & Wandel, 2000)[124].
- Adaptive capacity refers to the ability of a system to adapt to climate change in order to balance potential damages, benefit from opportunities or manage the consequences (IPCC, 2001).

Moreover, IPCC explained the Exposure x Sensitivity generates Potential Impact that it is define as a potential climate change impact on natural and human system.

Progressive adaptation is a method in order to minimize climate change impact on ecotourism destination (Brooks & Adger, 2005), even if adapting these destinations to climate change is mainly complex for the reason that vast number of stakeholders and products diversity and their connections with the environmental risks (Jopp, Delacy, & Mair, 2010[125]; Moreno & Becken, 2009[126]).

According to Hinkel (2011)[127], vulnerability could be minimized through adaptation, but this must be anticipated by vulnerability assessments to collect data on negative impacts and the nature and degree of vulnerability (IPCC, 2014).

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[121] Fussel, H. M., & Klein, R. J. (2006). Climate Change vulnerability assessment: An evolution of conceptual thinking. *Climate Change*, Vol. 75, No.3, pp. 301-329.

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CHAPTER 1.THE ANALYSIS OF THE PRESENT STAGE OF ECOTOURISM AS AN INSTRUMENT OF DEVELOPING GOODS AND SERVICES ECO-SUSTAINABLE OF LOCAL COMMUNITIES FROM PROTECTED AREA

The development of eco-sustainable goods and services through ecotourism is a complex solution, with a multiplicity of facets, with significant economic load, that can be positioned in protected areas due to the interconnectivity and pluralism characteristics in the superior valorization of the local communities' resources. Due to the variety of resource categories, the options for implementing the process of eco-sustainable goods and services through ecotourism in protected areas are multiple.

The capture of the local specificity and its integration into the ecotourism product develops the local economy and determines the uniqueness of the offer. At the same time, the specificity of local communities, from the tourists' perspective, is the optimal combination of all factors of influence, and precisely this diversity provides the basis for the success of eco-sustainable goods and services through ecotourism in protected areas.

1.1. Defining ecotourism as an instrument of developing goods and services eco-sustainable of local communities from protected areas

Ecotourism is an alternative to traditional tourism, mass tourism, and standard tourism supply because it attracts niche tourists, who are interested in natural heritage and socio-cultural communities. The ecotourism focuses on three significant aspects: socially responsible travel, enhancement of knowledge and improvement of environmental sustainability. The relevant aspect is to promote a responsible ecotourism that can reduce negative impacts and maximize the positive impacts for the environment.

The concept of ecotourism became popular when the mass tourism, which it was based on income and growth, had the negative social and environmental impact, rather than environmental conservation and socio-cultural aim of local communities (Ziffer, 1989). Ceballos-Lascurain in the 1980s defined ecotourism as "… Travelling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas". Ziffer (1989) underlined that ecotourism promotes non-consumptive use of wildlife and natural resources, and contributes to conservation of local communities. The International Ecotourism Society (TIES) (1991) defined ecotourism as "responsible travel to

natural areas that conserves the environment and improves the welfare of the local people." This definition elaborated by TIES is supported by the World Conservation Union's (IUCN) explanation of ecotourism, which in 1996 defined it as an environmentally responsible travel toward natural areas to appreciate nature that promote conservation, minimizing tourists' impact and provide for beneficially active socio-economic involvement of local communities. Ceballos-Lascurain (1996) articulated one of the most influential definitions of ecotourism: "traveling to relatively undisturbed or uncontaminated natural areas with the specific objectives of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas."

Sirakaya, Sasidharan and Sonmez (1999) highlighted the ecotourism as a new kind of tourism that does not consume resources, is educational, adventurous and focuses on undeveloped and under visited natural, cultural, and historical areas.

Honey (1999) defined the concept of ecotourism "as small scale travelling to fragile, pristine and protected areas with the fundamental objective of educating travellers, providing funds for conservation, yielding direct benefits for the economic development and political empowerment of the local communities, as well as fostering respects for different cultures and human rights". In order to explain this definition, Honey (1999) highlighted that through tourism benefit the local communities' low impact on environment. In the years, ecotourism definitions continuing to increase in literature (Fennel 2001, 2003). Fennell (2001) studied ecotourism definitions and identified five common variables used in order to describe ecotourism – "the natural environment, education, protection or conservation of resources, preservation of culture and community benefits". Bjork (2000) defined ecotourism as a form of tourism that focused on experience in protected areas and emphasized the appeal of environment conservation. The United Nations World Tourism Organization (UNWTO, 2002) has defined ecotourism "as tourism that involves traveling to relatively undisturbed natural areas with the specified object of studying, admiring and enjoying nature and its wild plants and animals, as well as existing cultural aspects (both of the past and the present) found in these areas". Furthermore, Fennell (2003) identified ecotourism as a sustainable form of natural resource-based tourism, which is managed to be low-impact, non-consumptive and locally oriented, in terms of control of resources and benefits to the people. Weaver and Lawton (2007) showed that ecotourism satisfies three "core criteria" - "(1) attractions should be predominantly nature-based; (2) visitor interactions with those attractions should be focused on learning or education, and (3) experience and product management should follow principles and practices associated with ecological, socio-cultural and economic sustainability." Stronza (2007) explained ecotourism as an essential tool for natural resources

conservation and local communities' development. Jalani (2012) defined the ecotourism as a strategy for supporting conservation and providing income for local communities. Indeed, ecotourism is as a potential economic rescuer to many rural communities that are encouraged by promise of jobs, skill development, and new business opportunities (Scheyvens, 2000).

For many local communities, ecotourism is considered as principal source of income (Stronza, 2007).

The developmental aim of ecotourism is to protect natural areas through production of income, environmental education and the involvement of local communities (Ross & Wall, 1999). It is based on the concept that the ecological environment creates a local resource that produces economic value by attracting tourists. Ecotourism, to promote conservation, can often provide a sustainable means for generating local communities' income without compromising, or with a manageable impact on ecosystem conservation (Christ, 2003).

In relation to the environment conservation, some authors (Honey, 2008; Segbefia, 2008) have underscored the importance of cultural values in ecotourism activities. Honey (2008) examined the promotion of cultural conservation, and respect for local culture. Other authors (Ross and Wall, 1999; Segbefia, 2008) have also described this value by highlighting the intercultural experiences of tourists and local communities through ecotourism, which they consider essential and which make ecotourism and all other forms of sustainable tourism meaningful.

Ecotourism is recognized as a promising source of earnings in protected areas. It is argued that the incomes associated with ecotourism in protected areas can change the local communities' perceptions of their environment (Coad, Campbell, Miles, & Humphries, 2008; Sirivongs & Tsuchiya, 2012) and can increase their commitment to the environment through the development of goods and services eco-sustainable. Lee (2008) asserts that the development of goods and services eco-sustainable can be increased when the local communities have positive perceptions about conservation and the benefits of ecotourism.

Ecotourism can empower and can provide direct incentives to the local communities and also help develop positive attitudes toward the environment and conservation (Arnberger, Eder, Allex, Sterl, & Burns, 2012; Clements et al., 2013; Nyaupane & Poudel, 2011). Therefore, ecotourism, if managed effectively and sustainably, is increasingly being identified as an instrument for environment conservation and the development of eco-sustainable goods and service (Bushell & Eagles, 2007; Harrison & Schipani, 2007; Udaya Sekhar, 2003).

Ecotourism is based on principle of carrying out economic benefits to local communities, primarily people living in, and adjacent to natural and protected areas (Page & Dowling, 2002; TIES, 2013). In maximising economic benefits, ecotourism advocates for the promotion of

recycling, energy efficiency, water conservation, and the creation of economic opportunities for local communities (Randall, 1987). Besides, social advocates due to its potential to create social benefits for all, improves the lives of vulnerable groups, and empower local communities (Scheyvens, 1999).

In many local communities from protected areas, ecotourism is seen as a solution for reconciling development and sustainability (Coria et al., 2012; Heng Zhang et al., 2012). On one hand, the local communities are central actors of tourism in protected areas and an insightful understanding of their attitudes is important to achieve the development of eco-sustainable goods and services. On the other hand, the local communities are influenced by protected areas and associated tourism both directly and indirectly through its existence and capacity to attract tourists. In addition, local communities generates new sources of environment conservation, and reinforce or revive traditional culture and lifeway (Butler & Hinch, 2007; Honey, 2008; Zeppel, 2006).

1.2. Highlighting specific issues, advantages and disadvantages of ecotourism as an instrument of developing goods and services eco-sustainable of local communities from protected areas

In the process of sustainable development of local communities, the rapid succession of the changes occurring in the global, economic, social, political and technological context, the evolution and deterioration of the protected areas, the increasing competition on the market of tourism supply in protected areas and the need for higher valorization of their own resources in the face of increased competition represent arguments in the management policy of local communities which has the task of identifying solutions for all these types of problems.

The intensification of the ecotourism phenomenon in the protected areas has led local communities to exploit their attractive features at a higher level and the concerns regarding the integrated development of the general and specific infrastructure, eco-sustainable goods and services, the preservation of the natural patrimony represent priorities in the attention of local authorities. Therefore, ecotourism contribute to a balance between these concerns and the internal needs of building an appropriate living environment.

In conjunction with the increasing global competition on rising the number of tourists, local communities interested in promoting ecotourism – as an instrument in the development of eco-sustainable goods and services - in protected areas face a series of problems related, on the one hand, on the assurance of the optimal living conditions for the inhabitants and, on the other hand, on the balance between the natural and the anthropic environment, between the tourists flows and the locals movements, between the advantages of practicing ecotourism for the local communities

and the negative impact that ecotourism might have on the environment, if the tourism activity is not planned and developed in an integrated way, in accordance with current and future requirements (Adu-Ampong, 2017; Black & Cobbinah, 2016).

Under these circumstances, local authorities have the responsibility to implement a coherent, comprehensive set of tools, methods and techniques for managing the natural and anthropic environment that will generate a superior value for all categories of ecotourism resources and, on this basis, increase the competitiveness of local communities in protected areas through the development of eco-sustainable products and services in local and regional contexts. At the same time, the development the eco-sustainable products and services of protected areas can contribute to the sustainable development of local communities and, on this basis, increase the satisfaction of tourists and guarantee optimal economic and social conditions for the local communities concerned. Therefore, ecotourists will became more aware in respecting the customs, traditions and culture of local communities and will understand and support local authorities' efforts to reduce the impact of ecotourism on the natural, cultural and economic environment of protected areas.

For local communities in protected areas, involvement in the ecotourism industry through the development of ecotourism products and services has many benefits, and their sustainable development is both a challenge and a priority. The challenge arises from the fact that a community must be receptive to the internal and external transformations that may affect it, adapting itself to these changes through local action and strategic initiatives (Strickland-Munro et al., 2010). At the same time, the challenge is to obtain economic benefits through ecotourism, with little impact on the natural and cultural patrimony. Products and services such as: beauty of the landscape, climate conditions, biodiversity, artistic cultural events, accommodation facilities, art monuments, efficient management of protected areas, folk tradition, relations with local communities - who find the best valorization through ecotourism - determines a protected area to be attractive for tourists. The way in which local community develops in the protected area, affects its present and future chances, makes ecotourism as an instrument in developing eco-sustainable goods and services a priority.

Today, there are over 6,400 local communities in the world who elaborate and implement local strategies and plans for developing eco-sustainable goods and services. Considering that ecotourism in protected areas implies responsibility, manifested by environmental preservation and supporting the welfare of the local population, the role of local communities lies precisely in the fact that they have to use their own resources, products and services in a sustainable way in

order to meet current needs, while ensuring the necessary resources for future generations (Sebele Lesego, 2010).

Ecotourism in protected areas offers the chance to learn the respect for nature and local culture, and for some, a chance for self-reflection inspired by the uniqueness of natural and cultural heritage; all tourists visiting a protected area must acknowledge this respect. Ecotourism as an instrument in the development of eco-sustainable goods and services plays an important role in protected areas and generates benefits for the local community: new jobs – ecotourism has a major contribution at hiring local staff, and implicitly, at alleviating unemployment; the supply of local products and services due to the fact that ecotourism also has an important driving effect, stimulating production in other fields, as a result of its interference and synthesis character; involvement of local people in decision-making and organization of tourism activities (Mustika, et. al., 2012; Reimer & Walter, 2013).

Although the vast majority of specialists, including international bodies, appreciate that ecotourism exerts positive influence on host communities in protected areas and on tourists' countries of origin, and that it should be encouraged, even if it sometimes has unfavorable consequences, there are experts who consider that it produces many social and cultural harmful effects on local communities in protected areas (agglomeration, pollution and many environmental problems). Uncontrolled tourist flows in protected areas may have the effect of damaging them, and the marketing of local customs and traditions can lead to a deterioration of cultural heritage. More, if economic development in protected areas is not adequately monitored, economic leakages may occur. However, ecotourism as an instrument in the development of eco-sustainable goods and services in protected areas plays an important role in the economic and social life of local communities (Öztürk, 2015; Santarem et al., 2015), triggering interest in identifying incidents and evaluating its outcomes, and through planning, development and integrated management, its benefits can be maximized and problems minimized.

Considered by its content and in connection with the development of eco-sustainable goods and services, ecotourism acts as a stimulating factor for the economic system of protected areas through the development of ecological cultural and recreational equipment, increasing retail sales and expanding the network of local shops, businesses, restaurants, cultural centers, which locals in protected areas and tourists can access. Thus, ecotourism often supports the payment of costs for cultural equipment and activities (e.g. festivals) that local communities in protected areas can not sustain without ecotourism.

Against the aspects mentioned above, some specialists consider that the rapid increase in the number of visitors in a protected area has social and cultural repercussions on local

communities. When two cultures meet, they have certain divergences, not necessarily negative, to which - most of the times - the local community can not adapt. This confrontation may have a negative impact of the local communities' culture in protected areas. The cultural heritage of the protected area can be diluted if the marketing and modification of local traditions, art and crafts is practiced with increased intensity. Moreover, the imitation of tourists' behaviors by locals results in the alteration of the socio-cultural patrimony of local communities in protected areas.

The unregulated tourism flows in the protected areas is sometimes accompanied by its degradation. Unsupervised cultural objectives may suffer depreciation through "graffiti", vandalism, etc. Thus, in the process of tourism consumption, the attractions of the protected areas can undergo a series of transmutations; as a rule, it deteriorates, being used excessively by tourists. As a result, the local community no longer enjoys easy access to them, thus causing local people's hostility to the development of ecotourism.

The social impact of ecotourism on local communities in protected areas has positive effects – representing a dynamic tool for education, raising the level of training, culture and civilization of people; facilitating access to cultural values; generating the exchange of ideas, information; causing the widening of the cultural horizon, the knowledge of tourists and the local population - as well as negative effects such as the polarization of the population through: unequal income growth, the enrichment of those who transform the traditional economy into tourism services through significant potential gains without improvement of activity (Das & Chatterjee, 2015); dismantling families by increasing divorce, abusive sexual freedom; developing consumer attitudes through phenomena of social pathology (drugs, alcohol, delinquency, prostitution).

Ecotourism needs help – in order to develop integrated, sustainable, non-convoluted, effective - from local authorities that require local communities and tourists to comply with certain environmental rules and laws in these areas through economic (taxes and subsidies), legal (national legislation and local decisions), social instruments and other various norms or restrictions.

The role of local communities in protected areas in the development of ecotourism is that they provide: eco-sustainable goods and services, ecotourism equipment in protected areas, the opportunity to learn new cultures, to carry out various activities in the nature (hiking, observation of the living creatures in their natural habitat, etc.). In support of local communities, governments and local authorities can encourage ecotourism by providing some facilities (lower taxes on profits, special subsidies, various information) (Stanciulescu, 2000). The environmental impact resulted by completing the construction of ecotourism equipment in protected areas can be monitored by local businesses of eco-sustainable goods and services by carefully monitor the effect of their own activities on the environment and develop plans to address these issues with specialized bodies or

organizations, and the authorities will support measures aimed at protecting the environment by using economic and legal leverage to compel economic agents involved in ecotourism to use environmental protection instruments. Also, tour operators and travel agencies will promote those protected areas or tourism businesses that are not in conflict with the environment, facilitating access for tourists who themselves should try to limit environmental pollution, being better informed and educated in this spirit to support the development of ecotourism in protected areas.

There are communities that respond actively to the challenges and problems they face, and the success of these communities lies in coordinating efforts and mobilizing local resources, eco-sustainable goods and services, encouraging active participation of the population in community life, assuming direct responsibility for the destiny of the locality, for the destiny of current and future generations (Martinez, 2008). Consequently, local communities in protected areas to support the development of ecotourism have to deal with the complexities of the problems they face, implement integrated environmental and socio-economic issues, involve a set of links with clearly defined tasks - local government, NGOs, women, young people, the private sector, academic institutions - in the process of planning the sustainable development of eco-sustainable goods and services.

Local communities must support ecotourism as an instrument in developing eco-sustainable goods and services in protected areas, the latter generating a multitude of benefits to the host population through the opportunities it offers and the conditions it requires for its good development, such as:

- minimizing the negative impact on the natural and cultural heritage, impact that would damage the protected area;

- awareness and education of tourists regarding the protection of protected areas;

- the existence of responsible operators, working with the community and local authorities, to meet the needs of the host population;

- providing funds for integrated management of protected areas;

- elaborating local tourist zoning and planning of tourists' flows for natural areas within ecotourism destination;

- implementing long-term monitoring programs for assessing and minimizing the impact on the environment of protected areas;

- maximizing the economic benefits of local communities and businesses in the protected areas through the development of eco-sustainable goods and services;

- developing ecotourism within the limits of the support capacity of the protected areas, limits established by the researchers in collaboration with the local communities;

- building an integrated infrastructure for the natural and cultural environment, reducing the use of fossil fuels and preserving the natural heritage of the protected area.

Developing eco-sustainable goods and services through ecotourism in protected areas is an important objective of the economic policy of local communities, given their beneficial effects. But, the dynamics of ecotourism is also conditioned by the achievements of other sectors of the economy, thus imposing the correlation between the growth of ecotourism and the rhythms of the overall sustainable development. The natural outcome of these rapports is the inclusion of the elaboration process of eco-sustainable goods and services development strategy between the fundamental attributions of the local public administration, with the fundamental objectives of protecting the environment, improving the quality of life, developing and maintaining a viable, effective and sustainable economy.

Practically, the local community in protected areas monitors the process of developing eco-sustainable goods and services through ecotourism, controls the decisions it issues and implements, generating sustainability by high resource exploitation, by developing and securing a sustainable local economy. The local community in protected areas is the main promoter of preserving the natural and anthropic tourism potential for the purpose of continuous and future use, generating a better knowledge and awareness of the concept of environmental conservation both by the host population and tourists.

In conclusion, the community in protected areas, as one of the fundamental environmental settings in which the individual carries out his activities, is the most favorable social field in which he is known and acknowledged, but also constitutes the micro-universe that gives human the effects of their own actions. Thus, the impact of all human actions is also reflected on the individual by the immediate influence of the community and its culture. Modern society seeks to improve the negative impact of human activity and still maintain the specificity of each community, which is quite difficult in a globalizing world. Tourists' flows are the right tool for transmitting influences, so the impact of ecotourism on host communities needs to be very carefully evaluated and managed to avoid irreversible negative effects.

The development of eco-sustainable goods and services through ecotourism implies the ability of a local community to maintain its tourism competitiveness in relation to new destinations, to attract new tourists, to maintain its original, unique character of culture and not to impair the attributes of the environment, the most important raw material of the tourism industry. Experts in the field have signaled the negative impact of tourism on the environment in protected areas through the dangers of excessive pollution, deforestation, thinning of the ozone layer, all with direct consequences on climate change and environmental damage. Its uncontrolled and unrelated

development threatens its own resources by overloading local communities beyond their carrying capacity limits, generating pollution through the demographic pressure it creates and contributes to aggravating the phenomena mentioned by associating socio-cultural pollution.

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Taking into account the content, the characteristics and the meanings of ecotourism, its interferences with the sustainable development of goods and services, on the one hand, and, on the other hand, the fact that ecotourism is one of the highly represented activity at the level of protected areas and / or that the prosperity of local communities embedded in their immediate neighborhood can not be left behind on a secondary plan, it is definitely understood that this is a future solution for the management of these areas. The development of eco-sustainable goods and services through ecotourism ensures the protection of resources, an optimal combination of all factors of influence within a territorial unit and a harmonization of the interests of the stakeholders involved. Moreover, such an approach responds to the fundamental objective of preserving / protecting the areas and, in a wider context, to their sustainable development.

PART II: PERSONAL CONTRIBUTIONS

CHAPTER 2. GENERAL CONSIDERATIONS REGARDING ECOTOURISM POTENTIAL EVALUATION OF LOCAL COMMUNITIES FROM PROTECTED AREAS. CASE STUDY: NATIONAL PARK OF SIBILLINI MOUNTAINS

Ecotourism represents a form of tourism whose essential objective is to preserve the environment and to contribute to the development of eco-sustainable goods and services at the level of local communities in protected areas. Although it is still a minor component in the tourism industry, ecotourism is growing rapidly and tends to attract tourists who respect the local culture and the environment.

Each local community that extends an already existing tourism sector needs to carefully assess its tourism resources. This assessment will determine whether the community has the potential to initiate ecotourism. Evaluation is a necessary step in the process of ecotourism development, prior to the decision to implement such a project and provides the possibility to determine a set of specific indicators to be monitored during the course of the activity.

Among the tourism resources to be assessed in a local community of a protected area which can provide opportunities for ecotourism are those associated with the natural and anthropic environment, the eco-sustainable goods and services. Apart from the analysis of the mentioned types of resources, it should be evaluated other factors that influence the development of ecotourism as well as the potential of the domestic and international tourism market and whether it is interested in the tourist attractions offered by the local community. Following the assessment of tourism resources, as well as other tourism factors, the ecotourism potential of local communities will be determined. The assessment can be made in the form of an inventory of elements favourable to ecotourism and by means of some indicators, which allow the determination of the size of ecotourism development. In this context, it is important to note the importance of developing a set of relevant indicators for ecotourism development to ensure a fair, objective assessment comparable to other localities or areas.

2.1. The ecotourism potential of National Park of Sibillini Mountains

The National Park of Sibillini Mountains is a protected area that safeguard the Sibillini Mountains. They extend to a length of about 30 km, determining two sides, the Adriatic Sea to the East and the Tyrrhenian Sea to the West, between the Marche region (for a third of the land) and the region of Umbria. The park include 18 local communities in the following provinces: *Macerata*

(Acquacanica, Bolognola, Castelsantangelo sul Nera, Cessapalombo, Fiastra, Fiordimonte, Pievebovigliana, Pieve Torina, San Ginesio, Ussita e Visso); *Fermo (*Amandola e Montefortino); *Ascoli Piceno* (Arquata del Tronto, Montemonaco e Montegallo) e *Perugia* (Norcia e Preci). The total population is 21770 of inhabitants.

The Park was established in 1993 and is currently managed by the Institution of the Sibillini National Park with its headquarters in the municipality of Visso (MC).

Figure no. 2.1. National Park of Sibillini Mountain Map

Source: http://www.sibillini.net/

The territory covers an area of about 71,437 hectares mainly mountainous terrain, with the surrounding hills and the many valleys born from mountain slopes furrowed by a stream. The predominant landscape is that of the limestone massif of the Apennines that, in this area, is as an interface between the softer shapes of the Tuscan-Emilian part and maximum heights of Abruzzo, taking severe and steep sections.

The mountain environment is characterized by glacial valleys, deep gorges, vast mountain meadows and rock faces. The heart of the massif and of the Sibillini Mountains National Park is the amphitheatre of peaks formed by Mount Vettore (2,476m), Cima Del Redentore (2,448m), Pizzo Del Diavolo (2,410m) and Cima Del Lago (2,422m) peaks. These peaks enfold the Pilato Lake, located at an altitude of 1,940 metres and under normal conditions comprises two distinct basins separated by a rocky isthmus. The lake is dominated by the eastern face of the Pizzo Del Diavolo, the chain's most spectacular calcareous wall. To the North of the Redentore and Vettore massif, the main Sibillini chain continues with Mount Argentella (2,200m), Palazzo Borghese peak (2,145m) and Mount Porche (2,233m), and it is here that the Cima Vallelunga spur peak (2,221m) and Mount Sibylla (2,173m), which gave its name to the entire chain, branch off to the east. To the North of Mount Porche, the chain descends to the Cattivo Pass, then rises to Mount Bove's southern peak (2,169m), descends again to the Cervara pass, and rises once again to the Pizzo Berro (2,259m) and the Pizzo Tre Vescovi (2,092m) peaks. Beyond the Forca Del Fargno pass, curving Mount Rotondo (2,102m) is the northern most "2,000 metre peak" in the massif. The spurs that branch off from Mount Bove Sud are the base of jagged, Rocky Mount Bicco (2,052m) and Bove's imposing northern peak (2,112m), defended at the Panico valley side by other calcareous faces. To the east of the Pizzo Berro peak, there is the Mount Priora (2,332m), which it is located in front of Amandola municipalities and hills of Ascoli Piceno Province.

2.1.1. Flora and Fauna

The differences in altitude and exposure of the slopes determine changes in the flora and vegetation; in the park, there are nearly 2,000 species of flora and over 200 species of vertebrates.

The flora include the *Sesleria Apennine*, which is the habitat for many of the plants endemic to the high Apennines and for glacial relicts; *Androsace villosa* and *Silene acaulis* that survived by adapting to such a harsh environment; *Salix retusa*, which it is a dwarf willow and grow around Mont Vettore's north-facing slope; *Calluna Vulgaris* and *Ephedra nebodensis* that grow on Valneria Crags and in the Fiastrone valley; *Chestnut trees* are present mainly on Marches slopes; *Festuca dimorpha*, a gramineous plant that grows in tenacious tufts and contributes to stabilizing the soil; *Brassica gravinae, Galium magellense* and *Isatis allioni* a cruciferous that grow on the detritus; *Drypis spinose* flowers and edible *Rumex scutatus* leaves that grow in scree's white stones; *Dacthylorhyza sambucina, Orchis mascula* and *Gymnadenia conopsea* that grow on the wetter and fertile plateau; *Orchis Ophrys* that is a genus orchids and grow in spring; *Viola magellensis* and *Saxifraga italic* that grow to the central Apennine's high altitudes; *Ranunculus*

alpestris and *Campanula alpestris* that grow on north massif rather on south massif, probably due to past glaciations; *Poppies*, *Narcissi* and *Cornflowers* are flowers that grow in July on Castelluccio Plains; *Agrostemma githago* and *Centaurea cyanus* that grow in rye field; *Carex buxbaumii* and *Carex disticha* that grow on the banks of the Mergani sinkhole, which collects surface water from the Gran Piano and *Nottoria*, located outside Norcia, that is an remarkable ancient oak with a circumference of over five metres.

The fauna include the wolf, which survived in the massif even during some of this species' most difficult times; the wild cat, for which the Sibillini are the northern boundary of its Apennine habitat - is a carnivore that eats rodent, passerines and reptiles, and it is capable of successful attacks on the Greek partridge; roe deer that has already made a successful return – it was reintroduced in 1953 and today is fairly widespread thought-out the Park; the Apennine chamois that the Sibillini National Park began a reintroduction program in autumn 2008, releasing the first eight animals with radio collars and, at the moment Bolognola wildlife area is home to four chamois. The list of mammals' resident on the Sibillini continues with the wild boar, snow vole, and the porcupine that lives in the lower reaches, the pine marten, and common species like foxes, weasels, and hedgehogs.

Approximately 150 bird species live in the Sibillini Mountains, of which 90 are nesting birds. The most relevant predators are the Golden Eagles, with four pairs nesting on the massif, and population could increase if the return of chamois and deer were to make more food available for the bird's winter diet; Goshawk, Sparrow Hawk, Peregrine Falcon, Lanner Falcon are rare forest birds of prey. The list of nocturnal bird of prey includes the long-eared owl, little owl, scopes, tawny owls and the eagle owl. Moreover, the National Park of Sibillini Mountains has one of the biggest population of Galliform - Greek partridges - in the Apennines. More common than the Greek partridges are the red-billed and the Alpine chough. In addition, there are the snow finch and wall creeper - which build their nests on the rock and use their long beaks to search for insects in cracks in the limestone - the swallow and fiscal shrike, the hoopoe and wryneck, and the stonechat and green woodpecker.

The reptiles living in National Park of Sibillini Mountains include the viper, common at low-medium altitude in the protected area. Zoologists, however, are more interested in the meadow viper, a species found only in the central Apennines in Italy, and that mainly eats locusts. The coluber, grass snake and four-lined snake are some of the Park's non-poisonous snakes. Common among the amphibian species are the spectacled salamander, crested newt and Italian frog, which live in various Sibillini watercourses. The Italian cave salamander, which lives in caverns and fissures in the rock, is decidedly rarer. The Sibillini Rivers and streams are home to many brown

trout. In addition, living in the Park are invertebrates endemic to the Apennines or, more precisely, to these mountains, as their names emphasize: the crustaceans *Andronicus dentiger sibillinus* and *Niphargus spoeckii sibillinianum*, and the beetle *Pachybrachys ruffoi sibillinus*. The invertebrate Chirecefalo Marchesonii is a species found nowhere else in the world, which lives in the water of Pilato Lake at 1,950 metres and it is a fragile red crustacean with a tapering body and no exoskeleton, 12-15 mm long, described for the first time in 1954 by Professor Vittorio Marchesoni of the Camerino University. This is not the Sibillini's only endemic species: the world's only population of *Chirocephalu Sibyllae* lives in a small lake at the foot of Palazzo Borghese. Almost the entire isolated mountain areas have better-know and lesser-known endemism, especially invertebrates that are seldom in contact with other populations of the same species and evolve in a completely autonomous manner. The Chirocephalus developed resistance mechanisms that allowed it to survive over the centuries: it actually breeds during September and October, and lays its eggs on the lakeshore sludge, but the embryo develops only when environmental conditions are favourable, usually in the following spring-summer.

2.1.2. The anthropic attractions of local communities from National Park of Sibillini Mountains

In the Park there are the following local communities: Arquata del Tronto, Bolognola, Castesantangelo sul Nera, Cessapalombo, Fiastra, Montefortino, Montegallo, Montemonaco, Norcia, Preci, Amandola, San Ginesio, Ussita, Valfornace, Pievetorina and Visso.

Arquata Del Tronto (Ascoli Piceno province) is located in the Marches region and it has 1115 residents on 92, 23 km² of surface. It was first mentioned in the eleventh century and a number of historians identify it with ancient Supicanum. It is called the "town in the Parks" because municipal territory falls in two national parks – the Sibyllini Mounts to the North, and the Gran Sasso-Monti della Laga to the south - and the parks are separated by the river Tronto. The **Castle** that dominates the town and valley below is built in thirteenth century by John of Naples. The **Town hall** and the **Civic Tower,** with its sixteenth-century bell, are in Piazza Umberto I. The **SS Annunziata Church** has a wood crucifix of the 1200s, carved and painted by the Benedictine monks. The **Church of San Francesco** in **Borgo** has two naves and precious furnishings realized in the sixteenth and seventeenth centuries. The **Church of Sant'Agata**, in Spelonga, has a long chamber with an exposed trussed ceiling, presumably from the fifteenth century. **The Madonna del Sole Church** has a sixteenth-century votive frescoes and inside there is fine rose window over

one of the two entrances and several inscriptions with invocations, and an image of the Sun and Moon. The **Church of San Silvestro,** which is located in the hamlet of Colle, has frescoes dating back to the sixteenth century. The **Madonna Della Neve Church**, which is located in the hamlet of Faete, has frescoes in the style of Alamanno and Panfino da Spoleto and outside there is a front porch with exposed trussed beams. The **Church of San Salvatore**, which is located in the hamlet of Borgo, has an ancient polychrome wood crucified Christ sculpted in the thirteenth century. The Church of Santa Maria delle Grazie, which is located in the hamlet of Trisungo, has a number of sixteenth-century frescoes.

Bolognola (Macerata province) is located in the Marches region and it has 136 residents on 25, 87 km² of surface. Bolognola was founded by three noble families from Bologna - the Pepoli, Malvezzi and Bentivoglio - who established the three areas that now make up the municipality - Villa da Piedi, Villa da Capo and Villa di Mezzo. As place of interest, finely frescoed **Palazzo Maurizi** is located at Villa di Mezzo and it is possible to see the remains of the ancient urban walls and towers dating back to the thirteenth century. The Chamois wildlife areas has been created nearby. The **parish church of San Michele Arcangelo** has a panel of the *Madonna of the Rosary*, by Giulio Vergari of Amandola, dated 1519; above the altar there is a *Crucifixion* by an unknown artist of the early 1400s. In Villa da Piedi, **Palazzo Primavera** of the 1400-1500s still has the equipment for making wool; nearby, there is the **church of San Nicolò**, which it was built in about the mid-nineteenth century; the aisles church has an apse delimited by six columns and a wood baptismal font by Bernardino Tagliacchi. In Villa da Capo are the **birth house of the musician Filippo Marchetti** (1831-1902), and the small **Malvezzi chapel**, from the fifteenth century. The **church of Santa Maria delle Grazie** of the mid-seventeenth-century has a central plan and stucco decoration, and still displays two valuable 1600s painting of *Our Lady of Egypt* and *Saint Macarius Hermit.* **Pintura** di Bolognola is a salient landscape feature found at 1,450 metres; from here it can be reached **Colle Della Maddalena**, a winter sport resort, and **Macchia Tonda** beechwoods.

Castelsantangelo sul Nera (Macerata Province) is located in the Marches region -along the River Nera, on one slope of Mount Cornaccione - and it has 260 residents on 70, 67 km² of surface. Powerful feudal lords, who ruled the valleys and local residents, created Castelsantangelo sul Nera in Middle Age. The main square is the site of the **church of San Sebastiano** which traditionally keeps the standard taken from the people of Norcia by the inhabitants of Ussita, Visso

and Castelsantangelo sul Nera, during the legendary battle of Pian Perduto. The church has seventeenth-century frescoes.

The main entrance to the old fortification is through fourteenth-century **Porta Sant'Angelo.** Almost at the top of the hill, there is the **fourteenth-century Santo Stefano church** with stone baptismal font. The **church of San Martino** and **the Benedictine Monastery of San Liberatore,** built over the ruins of the thirteenth-century castle; the church has 1500-1600s frescoes of the Umbrian school, some of which are attributed to Paolo da Visso or a follower. The **church of Santa Maria in Castellare** is located in the hamlet of Nocellato and it have a polished stone façade and portal with aedicule-shape windows. The interior is a simple nave with a span roof and houses a fifteenth-century polyptych by an unknown Umbrian-Camerino artist in the apse and a painted panel crucifixion attributed to Paolo da Visso. **The River Nera** springs are located near the quaint hamlet of Vallinfante, dominated by the peak of Passo Cattivo (1,900 m) and Mount Porche (2,233 m). The **church of San Vittorino**, in Nocria, has a fifteenth-century triptych attributed to Paolo da Visso, and the **church of Santa Lucia**, at Rapegna, with several painted panels, one dated seventeenth-century. The **church of San Martino** has a Romanesque design and subsequent refurbishing, the plain nave interior has a votive fresco of the Last Supper (1432) attributed to the school of Ottaviano Nelli.

Cessapalombo municipality (Macerata Province) is located in the Marches region and it has 491 residents on 27, 58 km² of surface. The town is in the Fiastrone valley, an area of immense archaeological interest. The 1799 earthquake destroyed most of the old town, and only the layout remains. There is no sure information about the origins of the municipality, but several documents suggested that Cardinal Fieschi ordered a castle to be built here in the thirteen century. Only part of the municipalities' territory lies within the National Park of Sibillini Mountains. The **parish church of Sant'Andrea Apostolo** was rebuilt in the period after World War II, although it still has a fifteenth-century wood group of the *Virgin and Child*, called the "Madonna dell'Impollata": the work was recently restored and belonged to the church of Santa Maria dell'Impollata, which stood near the Santa Maria hill, with its many springs.

The **abbey of San Salvatore** is in the Monastero district, and once belonged to the former monastery presumed to have been founded by Saint Romuald in the eleventh century. Inside there are the Roman masonry fragments and a precious 1200s Madonna and Child fresco above the altar. The crypt has three aisles cadenced by two rows of pillarlets with capitals.

In the hamlet of **Montalto**, which comprises the districts of Villa, Tribbio and Valle, there are the derelict square defence towers, the walls and the square water well that belonged to

Montalto castle. The fortification was the defensive stronghold of the Dukes of Varano, installed at high altitude and in a striking landscape position, and it is a typical medieval fortress. The **parish church of San Benedetto** has wood seventeenth-century crucifix and precious frescoes by Andrea De Magistris – *the Mysteries of the Rosary* (1526) and *the Madonna and Child with Saint Anthony Abbot* (1544). The **church of Santa Maria** has a 1468 panel by Girolamo di Giovanni – *Madonna of Mercury*. Finally, **Col di Pietro Castle**, also called the "Roccaccia", was an ancient lookout point, controlling the Fiastrone Valley below.

Fiastra (Macerata Province) is located in the Marches region and it has 656 residents on 84,48km² of surface. Archaeological finds prove that human beings have been present on this territory since the Neolithic Period. Mighty castles were built during the middle age, including Castrum Flastrae on the Colle San Paolo hill, its solid boundary walls reinforced by seven towers and a massive round keep. The Castrum belonged to the Magalotti family who were the Counts of Fiastra and of Longobard origin. In 1259, the feud was transferred to Camerino and after changing fortunes, in1545, it came under the church jurisdictions. A key feature of the landscape and the climate is Fiastra Lake, which is an artificial basin created by damning the river.

Magalotti castle were partly demolished in 1914 to build a belfry and houses for the town and nearby there is the **abbey church of San Paolo Apostolo,** with its Romanesque layout of a nave and two aisles. The church has polychrome wood group – Madonna with Child, dating back to the sixteenth century, by an unknown Abruzzo artist, and a precious seventeenth-century canvas by G.B. Gaulli, depicting the *Conversion of Saint Paul*. The **Romanesque church of San Flaviano** has a terracotta portale.

In the hamlet of Fiegni, there is a **Sanctuary** dedicated to **Blessed Ugolino,** a lay Franciscan buried in 1373. The sanctuary has still a cycle of devotional paintings and frescoes dating back to the sixteenth and seventeenth century.

In the hamlet of San Marco, there is the **church of San Marco di Colpolina** of the eleventh-twelfth century and has a crypt with a nave and four aisle in pink limestone, travertine arches, sandstone columns, white limestone capitals and cross vaults. In the sacristy, there is a sixteenth-century gilt metal crucifix. The exterior retains a Romanesque light stone portal and the triple sandstone apse.

In the hamlet San Martino, there is a Romanesque church of the thirteenth-four century with the several altarpieces by the Crivelli School and it has a silver-plated wood cross and four sixteenth-century candleholders. The **Hermitage** called "**Grotta dei Frati**" stands on the border with Cessapalombo. It is the largest of a series of caves in the **Fiastrone gorges,** which are formed

through karstic and river erosion. The grotto contains a small church built in 1234 and the lancet arch entrance and terracotta vault are still visible. The sanctuary was home to Minorities until the 1600s and contains a huge bowl that the monks used as a cistern. The **church of San Lorenzo al Lago** -Benedictine origin- may date back to the twelfth-thirteenth centuries and it is thought that the oldest part was built over the ruins of a pagan temple. The church retains traces of frescoes, examples of Late Romanesque painting, frescoes of the Camerino School and several 1700s canvases by Valeri.

Montefortino (Fermo Province) is located in the Marches region and it has 1117 residents on 78,62km² of surface. The settlement was certainly inhabited by the Romans as shown by the remains of the Augustan century evident in several surviving monuments. The centuries that followed brought marauding Goths and Longboards.

The old town stands on a steep hill slope. The urban structure has a pyramid silhouette, with overlapping terraces. The **church of Sant'Agostino** stands on the northwest side of the town, near to the top of hill. The complex comprises the church and the convent of the fourteenth century. The interior of the church, remodelled in the sixteenth century, has a nave with a raised presbytery. During restoration, numerous votive frescoes remerged such as *Martyrdom of Saint Erasmus and Sebastian*. The **church of San Francesco**, with the convent annex, was built from 1549. Inside the church there are the painting by Simone De Magistris and Malpiedi – the *Madonna of the Rosary*, as well as, stuccoes and paintings by Malpiedi. The Neoclassic **church of San Michele Archangelo** was built halfway up the hillside from 1860 to 1870, to a design by Fermo architect G.B. Carducci and the interior has carved, gilt side altars from the **church of Sant'Agostino**, documented from the 1400s. The **Madonna Della Pace church** was built in the thirteenth century and restored in 1632. In the **Palazzo Duranti**, of the early 1500s, there is a lavish pictures gallery donated by painter Fortunato Duranti and between the priceless works it can be mentioned *Madonna and Child flanked* by the *Archangels Michael and Raphael* of the fifteenth-century by Francesco Fiorentino; a late fourteenth-century carved cross with miniatures; numerous canvases and bas-reliefs in wood and bronze. The **tower-houses**, sixteenth-century buildings, located in the town centre were used as lookout posts to protect against brigand attacks. The **church of Madonna del Fonte** stands outside the built up area and is dated 1647. It has a Greek-cross plan and an octagonal cupola. The interior of the church has a lavish fresco and stucco decorations. The **Madonna dell'Ambro Sanctuary** stands 8 km out of the old town, at 680 metres, near the river of the same name. It was built between 1550 and 1650, and has been extended over the centuries. Traditionally its foundation is linked to a miraculous event that occurred on this particularly

charming beauty spot, wedged between two rock faces. The story is that a dumb shepherd recovered the powers of speech thanks to the miraculous intervention of the Virgin Mary. The sanctuary is run by the Franciscan order and attracts thousands of pilgrims who come to worship the Virgin of the River Ambro, depicted in a fifteenth-century terracotta statue painted in oils. Apart from the Apparizione chapel inside, the nave has another six. Martino Bonfini frescoed the interior of the sanctuary with images of the 12 Sibyls. The **church of Sant'Angelo in Montespino**, have been founded by Longboards between the sixth and seventh centuries, and then passed on the monks of Farfa in the tenth century. Actually, the interior is bare, with two aisles and the presbytery raised above a well-preserved crypt with spoil column and capitals. A stone in the sacristy is dated 1064. The **sanctuary of San Lorenzo al Volubrio** is located near the Infernaccio Gorges and Brother Pietro Lavini renovated it.

Montegallo (Ascoli Piceno Province) is located in the Marches region and it has 504 residents on 48, 46km² of surface. It was established around the castrum of Santa Maria in Lapide, built in about the eighth century near the church of the same name. The fourteenth-century Costruzioni Egiziane statues defined the place as "Mons S.Maria in Gallo", and later "Terra di Santa Maria in Lapide". In sixteenth-century, the population moved down the valley and founded the nucleus of the present day hamlet of Balzo. Montegallo municipal territory extends along Mount Vittore's eastern slope, along the ancient "grain road" that was taken by the reapers who travelled to Umbria and Latium through Passo Del Galluccio and over the Castelluccio plains. The place name Montegallo refers to the group of 27 districts that make up this municipality, whose centre is Balzo.

The most interesting attraction is the **church of Santa Maria in Pantano** presumed to be Early Medieval, built on Mount Torrone (1,159 m), facing Mount Vettore. Inside of the church, there is an aedicule with sandstone friezes, a 1600 fresco by Martino Bonfini depicting the Prophets, scenes from the New Testament and the Cumaean, Hellespontine, Agrippine, Phrygian and Delphic Sibyls. Finally, **Rigo parish church** has a noteworthy, heavily restored, sixteenth-century altarpiece by a follower of Cola dell'Amatrice.

Montemonaco (Ascoli Piceno province) is located in the Marches region and it has 568 residents on 67, 81 km² of surface. Hermit monks in the Dark Age found Montemonaco, and its history has always been linked to the magical, enchanted Grotto of the Sibyl, said to be where the Cumaean Sibyl was enchained by Divine Justice, condemned to spend her days there until the Final Judgement. Another feature of the territory is Pilato Lake, of glacial origin and found at

2000m, up on Mount Vettore; the body of the Roman consul Pontius Pilat is said to lie on the lake bed, dragged down by two angry oxen.

The old centre has well preserved stretches of its wall, remnants of the Middle Age. Montemonaco was defended by mighty **fortifications** with thirteenth-fourteenth-century **section breaker towers** that are still visible. The **Santi Benedetto e Biagio church,** with its 1546 portal, has an interior fresco of local art of the Crivelli School, depicting the *Crucified Christ between the Virgin and Saint Lucia,* as well as a 1606 silver reliquary by goldsmith Cristoforo da Norcia, containing some remains of a limb of Saint Benedict of Norcia. A well-made 1400s carved wood polychrome crucifix is in the apse. The **church of San Giorgio all'Isola** dates back to the ninth-century and it was acquired by Farfa abbey in the tenth century. The Romanesque apse is original, with its twelfth-century Byzantinesque frescoes of *Christ Pantocrator between the Madonna and Saint John in the presence of the Apostles.* The **church of San Lorenzo "ad tre rivos",** in Vallegrascia, was originally built with two aisles of difference sizes and a raised presbytery. The belfry is englobed in the apse and has unusual small splayed openings facing inwards for a better diffusion of light. Inside the church, there are medieval sandstone slabs with simple bas-relief carving of the forces of good and evil. The Romanesque crypt is well preserved, with two small freestanding columns and six more resting on capitals decorated with foliage and fauna. The **ancient sanctuary of Santa Maria in Casalicchio** of the fourteenth-century, in hamlet Tofe, has partly restored sixteenth-century frescoes attributed to Vitruccio Vergrari. The exteriors has a plain façade. Inside the church, there are the polychrome wood *Virgin with Child* and a *Madonna of the Rosary.*

Norcia (Perugia Province) is located in the Umbra region, it has 4888 residents, and it has 275,58km ² of surface. Norcia, Gregory the Great's *Vetusta Nursia,* birthplace of Saint Benedict (Europe Patron), developed on the western side of the Santa Scolastica plain. The earliest settlements probably date back to the Neolithic period. In about the sixth-fifth century BC, this was the major Sabine town. In 268 BC, it became a prefecture and later a Roman municipium. In about the mid-third century, Saint Felicianus, Bishop of Foligno, began evangelization of the territory, arousing great fervour amongst the people. From the sixth century, Norcia was the diocesan town. In 532, it was laid waste by the Goths, who also destroyed the castle; in 576, it was destroyed again by the Longboards period and then by the Saracens. In the communal period, despite disputes with neighbouring communes and with Spoleto, it became a strong, flourishing town. In 962, it was donated by Otto I to Pope John XII. In 1569, it became home to the "Prefettura Della Montagna".

The **medieval fortification**, which surrounded the old town, cover a perimeter of about 2,000 metres. The walls are interspersed with seven gates, giving access into old town, which include seven districts called Guaite. The Basilica of San Benedetto, La Castellina and the cathedral of Santa Maria Argentea surround **Piazza San Benedetto**, which is located in the city centre.

The **Basilica of San Benedetto** was built in the Umbrian-Gothic style in the fourteenth century. The aisle less interior is a Latin cross. On the right of the church there is *Portico delle Misure*, which displays nine ancient local measures for cereals, laid out on a stone counter. Inside the church, there is sixteenth-century wood choir and a *Madonna with Norcia Saints* by Vincenzo Manenti. The crypt has a nave and two aisles. **La Castellina,** actually it is the Civico Diocesamo Museum with its thirteenth-eighteenth century painting and sculptures. It is a steeply scarped square building with corner towers, commissioned in the sixteenth century for the Pope Julus III from Vignola, to house the "Prefettura Della Montagna". The central courtyard gives access to the chancellery and audience chambers, the prisons, the stables, and the torture chamber; from the later, an underground passage leads outside of the town walls. The **Cathedral of Santa Maria Argentea** has mighty stonewalls and a sloping base, added as an anti-seismic measure after the church was destroyed by earthquakes both in 1703 and 1730. Inside there are marble sculptures created by Giuseppe Paladini and Cristoforo Roncalli. It has a portal with wood fixtures of the eighteenth-century. The 1354 **Templietto,** built in travertine by Vanni Della Tuccia can be found in Via Umberto. The **Church of San Giovanni** was built in the fourteenth century and raised in the 1700s and inside there is Giovanni Dalmata's Madonna della Pala altar, which was modified with stucco and painting following damage caused by 1500s earthquake. The **Church of Sant'Agostino** of the fourteenth-century has a large Gothic portal and the lunette is frescoed with a *Madonna and Child and Saint Augustine.* It was refurbished in the Baroque style in the 1600s, retaining the existing fourteenth-sixteenth century decoration. The interior contains the 1300-1500s frescoes and works by Gaspare Angelucci de Mevale. The **Church of San Francesco** was rebuilt several time following the repeated earthquakes over the centuries. Inside the church, there are the frescoes of the fifteenth and sixteenth century. **The Church of Santa Caterina** was radically modified in 1950 and the apse is decorated with an early 1500s fresco of the Umbrian-Marches school, depicting the *Coronation of Our Lady.* The **Renaissance Madonna Della Neve Church** is located just outside the built up area and although it was damaged by the 1979 earthquake, it is still possible to see frescoes in the large niches, painted in 1540-84. Near the old city, there are the green marcite, water meadow, example of continuous irrigation system that allows ten reapings of grass per year. Outside the centre there are the **Churches of Sant' Andrea,**

Madonna Bianca and **San Salvatore.** The **Church of San Salvatore**, near **Campi** cemetery, has a gable façade with two portals. The interior has an iconostasis frescoed by Giovanni and Antonio Sparapane, a *Discent to Limbo* by Nicola da Siena and fourteenth-century *Crucifixion*. **Castelluccio** is a Norcia village, at 1,452m, at the foot of Mount Vettore, in a dominant position on *Pian Grande*, a typical example of mountain settlement that developed along an important transhumance route. The walls of the houses bear distinctive graffiti that narrate the history of the hamlet. The *lenta* or Castelluccio lentil is grown in the surrounding lands.

Preci (Perugia province) is located in the Umbra region and it has 704 residents on 82,03km² of surface. Preci Castle was built in the thirteenth century and in 1328, an earthquake damaged it. The picturesque castle rises over the River Campiano valley. The layout is late Medieval but there are also building with sixteenth-century architectural and decorative elements. The **parish Church of Santa Maria** is characterized by fourteenth-century façade portal and a tall eighteenth-century belfry. The **Sant'Eutizio Abbey** is located a few kilometres from the town centre and Benedict monks founded it in the fifth century. The **Romanesque church**, with rose windows (1236) surrounded by the symbols of the four Evangelists, was built in the twelfth century (1190). The complex, comprising monastery buildings and the church, is arranged around a courtyard. The monastery, which once had a lavish library, is still home to a monastic community. The **parish church of Sant'Egidio**, in the Poggio di Croce district, has a portal with fifteenth-century painting. The **parish church of Sant'Andrea**, in the Roccanolfi district, retains panels from a fifteenth-century polyptych, stolen at the end of the twentieth century and partially recovered.

San Ginesio (Macerata province) is located in the Marches region and it has 3376 residents on 78,02km² of surface. The first settlement dates back to the Dark Age. San Ginasio stands on a hill on the left slope of the Fiastrella valley, looking out onto a view that rolls from mountains down to the sea, which is why San Ginasio is known as "the balcony of the Sibillini". The **Romanesque SS Assunzione collegiate parish church** stands in the town's main square. The façade is divided into two orders and it had a travertine portal with its small octagonal columns alternating with square pillars and the interior features a nave and two aisles. The civic tower with onion terminal, stands at the side of the main façade and was rebuilt in the seventeenth century. The **Church of San Francisco**, which is located near the collegiate, was the location where the community originally assembled to decide on town issues. The apse and the portal, with its tortile columns, survive from the original 1200s building. The Neoclassical interior has fourteenth-

fifteenth century frescos. The origins of the **Church of San Michele** date back to 996 and has a Gothic and the Folchetti frescoes inside. The **Santi Tommasso e Barnaba Church** was built in 1365 and was one of the five hospital for pilgrims that existed during the middle Ages inside the urban walls. The **Church of Santa Maria delle Macchie** used to be a part of the lost Macchie abbey. The **Monastery of San Liberato**, deep in the countryside at a short distance from San Ginesio, was commissioned in 1247 by the lords of Brunforte, to house the mortal remains of the Saint and his companions.

Ussita (Macerata province) is located in the Marches region, it has 419 residents on 55, 30 km² of surface, and it comprises 12 districts. Ussita was the most important of the five Guaite that freed themselves from feudatory authority in the twelfth century and become part of the commune of Visso. The hamlets of Fiuminata and Piave make up the municipal capital; the town hall is in Piazza dei Cavallieri and its picture gallery exhibits various works. The **Church of Santa Maria Assunta** is located in hamlet of Pieve and was erected in the 1300s over the foundations of an ancient place of worship. In aisles interior there are the frescoes attributed to Paolo da Visso and there is an important oil panel by Camillo and Fabio Angelucco depicting the *Assumption of the Virgin and Apostles.* **Castel Fantellino** stands on the hill of the same name and was a satellite structure for the ancient castle, demolish in the early twenty century to allow building of a new cemetery. The **Votive Chapel dedicated to Saints Roch and Sebastian** was erected in 1485. The **Church of Santa Lucia** in the hamlet of Sasso, was built in the thirteenth century and was later enlarged. The **Church of Sant'Antonio di Padova** was completely restored between 1915 and 1927 with a travertine portal with tortile columns. The 1407 **chapel at Capovazza** was rebuilt in 1905 and dedicated to **Saint Scolastica.** The **small Church of Tempori** has a neo-Gothic terracotta façade characterized by pinnacles, produced in 1912 by the Perugia architect Briscani. Also at Tempori there is a small **Romanesque Church of Sant'Ercolano,** with the stone portal and distinctive apse. **Casali's Church of Santi Martiri Vincenzo e Anastasio** is a Romanesque building that was consecrated in 1093 and preserves the typical semi-circular apse. The **Church of Santa Reparata** in the hamlet of Vallestretta is of ancient origin but rebuilt in 1915. The **Santa Croce Church**, in the hamlet of Sorbo, was built in 1860 to replace the ancient church, which dated back to fourteenth century. In addition, in Sorbo, there is the **Church of Santo Stefano** that was founded in the thirteenth century and restored in 1942. The **Church of Sant'Andrea Apostolo** has the fourteenth-century façade, stone portal with ceramic ogive lunette and some frescoes in the church are attributed to Paolo da Visso. The **Church of San Placido** of the fourteenth-century

has a various oils on canvas, eighteenth-century canvas and sixteenth-century terracotta statue of Our Lady.

Visso (Macerata province) is located in the Marches region and it has 1076 residents on 100, 40km² of surface. It is linked to transhumance and has always been a corridor and meeting point for shepherds travelling between the Roman Maremma and the Apennines. Up to the thirteenth-century earthquake, Visso stood on the hill, but was rebuilt afterwards on the Ussita and Nera valley floor. Until the establishment of the Kingdom of Italy (1860) the territory lay Umbria and was later assigned to the Marches, until 1927, when it returned to the Umbria's jurisdiction until 1929, and since then it has been in the Marches. The old centre is positioned between the rivers Ussita and Nera. The **Collegiate church of Santa Maria** was founded in the twelfth century with later modifications and it is located in Piazza Martiri Vissani. The church has the stone side portal and it is decorated with tortile columns and columns-bearing lions. The lunette is frescoes with an *Annunciation* attributed to Paolo da Visso; the Romanesque baptistery chapel has a fourteenth-century stoop as well as fourteenth-fifteenth-century frescoes that survive from the original decoration. The **Church of Sant'Agostino** that today is a museum and art gallery with religious panels, frescoes and wood sculptures. The **Gothic Church of San Francesco** has a façade and portal gothic and a rose window; the aisle less interiors has a trussed ceiling and a wooden sixteenth-century tabernacle. **Palazzo dei Governatori** of the fourteenth-century has a distinctive colonnade. **Palazzo dei Priori** is the town hall and home to the Monti Sibillini National Park Authority. The built was erected in 1270 and enlarged in 1325; the façade has austere carved stone windows, two clock dials and a wide Gothic portal entrance. The striking fortress towers and walls dominate the old town. The **Macereto sanctuary**, a few kilometres of the centre, is founded in the sixteenth century. It has a fourteenth-century oratory and an aedicule built around the wood statue of the Virgin. The church is the Bramante style, with an octagonal plan and three entrance.

On 1 January 2017, the municipality of **Valfornace** (Macerata province) was established by merging the adjacent municipalities of Fiordimonte and Pievebovigliana. It is located in Marches region and it has 1015 residents on 48,51km² on surface. The built up area is located in an archaeological site, the proof of ongoing settlement from Prehistoric time up to Roman period. The current urban nucleus is on the valley floor at the junction of the main roads that connect Umbria and Marches. This municipality comprises several hamlets. The **parish Church of Nemi** has 1400s frescoes by Paolo da Visso and an Enthroned Madonna by Boccati. The **Castello Church** has an impressive 1455 Crucifixion attributed to Girolamo di Giovanni. The **parish Church of Santa Maria** was a part of an old church flanking and englobed in a recent building.

An inscription indicates that this church was erected in 1722 over the older building; inside has frescoes by the Cola di Pietro School, a wood crucifix and Madonna, two altar-pieces and a baroque altar. The **Gothic Church of Sant'Agata** features a wall in the square stone blocks with two Gothic openings. The interior has 1400s frescoes and a Crucifixion of the fourteenth-century. The **Sant'Agostino convent complex** has a cloister, which still has the original Renaissance forms, and a later, aisle less church. The **Church of Sant'Oreste**, dating back to the thirteenth century is an aisle less building that has a semi-circular apse, with two stone holy water fonts and several paintings by Durante Nobili and Simone de Magistris. Near the main town, in Rodi district, there is the **Madonna di Carpineto sanctuary** that was built in at least the 1300s and has several frescoes by Bontulli. The **Madonna di Caspriano sanctuary** was built on Macereto model; it is octagonal and striking for its span roof and white squared stonewalls. The interior contains many paintings and religious images. The **Church of Santa Caterina** is at the top of the village, whilst the **parish church of San Michele Archangel** is in an isolated position. The **Capriglia** hamlet retains the **relics of an ancient fortress** that was the kingpin of Camerino state defence; two **towers** are still discernible, with portions of boundary **walls**, partly englobed by the belfry of the **San Biagio Church**.

2.1.3. The evaluation of eco-sustainable goods and services offered by the NPSM

Like other protected areas in Italy, NPSM has an urgent need to become visible in the territory. To achieve this objective, **visitor centres**, called *Case del Parco*, were opened, based on the model of the *Maison du Parc*, established in French protected areas, but with their own particular characteristics. In addition to inform tourists about the protected area, these building are designed to include museums and to assist contact between local communities and park authorities, and to foster social and economic activities in the territory. Separately, in almost all park municipalities, there are museums with various works of art, paintings, sculptures and library. The **Visit Centre (Casa Del Parco) and Fauna area of the Apennine chamois** located in Fiastra municipality is managing the wildlife area in Bolognola municipality. The **Visit Centre (Casa Del Parco) and Charcoal Museum** is situated in Cessapalombo municipality and includes a museum dedicated to the art of making charcoal, which is an ancient work. The **Visit Centre (Casa Del Parco) Chirocefalo and Pilato Valley** is located in Foce (hamlet of Montamonaco municipality) and it provides information and focus on Chirocefalo Marchesoni and Pilato Lake. The **Visit Centre (Casa del Parco) and Sibylle Museum,** in the centre of Montemonaco municipality, is showing the Sibylla Story with its myths and spells through the illustrative panel, books and game

for children. The **Visit Centre (Casa Del Parco) and Museum Butterfly Garden** is located in Montalto (Cessapalombo municipality hamlet) and it has a Butterfly Museum and a Garden of 12000mq that focusing on spontaneous, aromatic, honey and medicinal plants. The **Visit Centre (Casa Del Parco) and Antropogeografico dei Monti Sibillini Museum** is located in Amandola municipality and it was recently installed in the 1500s convent of San Francesco. It analyses the natural and anthropic history of Park territory by reading its landscapes with state-of-the-art interactive museum tools. The **Civico Diocesano "La Castellina" Museum** in Norcia municipality comprises religious works of the thirteenth-eighteenth-century. Inside, there are the Crucifix of the thirteenth-century by Petrus Pictor from Campi (hamlet of Norcia); the Our Lady of the Rosary altar-piece of the sixteenth-century from the church of San Vincenzo in Norcia by Sparapane workshop; a Saint Francis surrounded by virtues and vices of the fifteenth-century and it attributed to Francesco Botticini and the Risen Christ of the 1460 by Nicola da Siena. The **Museum of Civiltà Contadina**, in Norcia, located in Palazzo dei Cavalieri di Malta, housing work tools and everyday rural objects from Norcia and neighbourhood. The **Raffaele Campelli Museum** situated in Valfornace municipality town hall is housing fossils, Roman and High Medieval gravestones, and Roman and Picene relics such as vases, fibulas, jewels and coins from the Valfornace Area. The **Nostra Terra Museum** located in Pieve Torina municipality on the ground floor of the Sant'Agostino convent is showing typical objects and tools used by local farmers and mountain inhabitants. There are ten rooms and the convent courtyard, with reconstructed interiors of a cellar and a kitchen, as well as sections dedicated to handicrafts, photography and stock-rearing. The **Pinacoteca San Giovanni** located in Pieve Torina municipality and it contains the collection of religious works. The **Civico Scipione Gentilini Museum** situated in San Genasio municipality and it has Roman sculptures and inscriptions, Picene relics, and Gallic bronzes; paintings, such as the Battle between the citizens of San Ginesio and Fermo in 1377 by Maestro di Staffolo and the Marriage of Saint Catherine from the Ghirlandaio workshop. The **Public Library** in San Ginesio municipality contains 5000 volumes, 3000 parchments, 12 incunabula and 20 manuscripts. The **Civico e Diocesano di Sant'Agostino e dei Manoscritti Leopardini Museum** situated in Visso municipality is set up in the Gothic church of Sant'Agostino built in the early fourteenth century. The museum has the fourteenth-century sculpted crucifix, an Abruzzo region style gothic cross, many works by Paolo da Visso and a copy of the Madonna Del Macereto. The **Landscape Museum** in Amandola municipality is a Visit centre and it includes the Casa Del Parco and Antropogeografico museum, which showing the descriptions of the Sibillini landscape. The **Leopardi Palace Museum**, in Montefortino municipality, include the Casa Del Parco, the **Pinacoteca Fortunato Duranti**, which contains

works donated in 1842 by the painter Fortunato Duranti, **Diocesano Arte Sacra Museum** and **Faunistic Museum of Sibillini.** The **Visit Centre "Mills Museum"** is situated in Preci municipality and it is focusing on the ancient method of work with mills.

Popular Festivals - throughout the territory, in different seasons and in different areas of the park are held fairs, festivals and pageants, such us: solemn Good Friday procession and tasty mountain fairs; the worship of Saint Benedict but also the troubling recollection of necromancers and witches who were said to have inhabited the Sybil' Cave and the banks of Lake Pilato over the centuries. Alongside the themes presented in the all Apennine massifs, the Sibillini folk traditional embrace other themes typical of the territory's geographical features, its mythology and gastronomy. Therefore, along with general festivals like Good Friday and Carnival, and typical Apennine feasts like the Norcia bonfires, there are historical re-enactments of the Queen Joan cortege, the birth and preaching's of Saint Benedict, the mysterious fairies that lured Picene shepherds to the grotto of the Sibyl and her curse. Trade fairs and festivals celebrate Castelluccio lentil, Norcia hams and other charcuterie, and truffles.

Norcia and Saint Benedict. This festival is in honour of **Saint Benedict**, patron of Europe, born in Norcia, in the fifth-century. Currently, the festival features "pro Europa Una" a torchlight procession which sets off from a different European city each year and reaches Norcia on the night of March 20, commemorating the diffusion of Benedictine monasticism in the entire continent. The following day, March 21, the historical pageant and Offerta Del Palio take places, re-enactments of the ceremonies that the town used to dedicate to its patron saint in the past.

Honouring the truffle. In the last week of February, a **black truffle and local food specialities trade fair** is held in Norcia, the capital of Sibillini Gastronomy. Besides the prized Norcia black truffle, other charcuterie, cheeses, Castelluccio lentils are shown and sold to visitors. Crafts, agricultural equipment also have their share at the event. Norcia event also includes traditional dance and folk music performance, conferences, exhibitions and sport competitions.

Carnival in Amandola. The Sibillini areas celebrate the arrival of Carnival, particularly in Amandola. On Shrove Thursday afternoon, a **parade of allegorical floats and groups of masked people** winds its way along the town street. The celebrations end on Shrove Tuesday, with the funeral of Kind Carnival.

New Year Festivals. The Sibillini traditional festival calendar starts with **Norcia Pasquarella**, celebrated yearly on January 2-5. It is an ancient pastoral custom staged by groups of volunteers. Men and women, often dressed in traditional costumes, announce the birth of the Child Jesus with songs and dances, and spread the happy news to the country folk in the Norcia hamlets. In old town of Amandola on 6 January, is celebrated the **Feast of the Befana**. This event

announces the arrival of Befane (good witches) into the town, followed by distribution of gifts, brulè wine, roast chestnuts, all accompanied by music and traditional dances.

Easter. As in the case everywhere in the Apennines, the Sibillini villages organize the Holy Week celebrations. At Quintodecimo, an Aquasanta Terme hamlet, a religious re-enactment called the **Madonnelle**, takes place on Good Friday evening, with Via Crucis tableaux staged along the streets. A suggestive **Good Friday and Passion of Christ procession** winds its way through the streets and squares of Amandola. Nonetheless, Norcia old town is the scene of the **Good Friday procession** which moves along town walls where tableaux are stages of the most salient points of the Via Crucis.

Spring Festivals. Spring celebrations, originated from pagan rites and connected with seasonal changes, are widespread in the park. One striking event is **Piantamaggio**, which takes place in the hamlets of Norcia, in the night between April 30 and May 1. At Ancarano and Campi, tall poles made from stripped tree trunks are planted, and a leafy branch is attached to them. The town came alive with the local folk singing and dancing, at the foot of this phallic symbols invoking fertility of the land. On 1 May, at San Ginesio, there is the **Colle in festa e arte madonnara festival**, which is local fare event accompanied by works prepared by internationally renowned pavement artists (madonnari). The **feast of Saint'Eutizio** is a religious event that it is celebrate on May 23 in both Sant'Eutizio abbey and Preci municipality old town.

Castelluccio in Flower. The **Castelluccio Fiorita**, in the middle of June, which is a work of nature and not of people, is a spectacular carpet of flower that colours Pian Grande. The arrival of spring in the mountains also marks the return of herds and flocks.

Summer Food Festivals. In the summertime, the foods festivals abound in this season and are accompanied by cultural events. The former include the Bolognola's **Antico Sapore di Montagna festival** in July, and the August **Lentil festival** at Castelsantangelo sul Nera. The village of Cupi has an interesting **sheep-farming trade fair**, also in August. A historical re-enactment, **Alla Corte della Regina Giovanna** (At the Court of Queen Joan) is held at Arquata Del Tronto. The leading figure in the cortege is the queen, who comes down from her castle to the place where a banquet is held each year in her honour, with dances, music, and singings and ancient libations. The **Dicessa delle Fate**, or Fairies Descent, is re-enacted every three years on the August 16, the feast of St. Roch, at Pretare, a hamlet of Arquata. The event is linked to the Pretare mythical origins and describes the shepherds' encountered with fairies, mysterious creatures of the service o Sybil, who appeared as women, but have goat hooves under their sumptuous robes, and could change people into animals. The fairies could go into Pretare, but they were forced to return to the cave before daylight, to prevent the discovering of their goats traits. Guerrin Meschino defeated

the Sybil magic powers and the spell of the fairies was broken, so they married the shepherds and gave origin to Pretare.

Autumn Festivals. September in the Sibillini has a variety of events on offer. The **Most Holy Crucifix**, on 1st September, celebrated at the Madonna dell'Ambro sanctuary with a procession in which devotees offer the *canestrelle,* commemorates the apparition of the Virgin to a young deaf-mute shepherd. Castelsantangelo sul Nera is the venue of a **Ciavuscolo Festival** and an **International Theatre Festival** is held at Amandola. As well as normal performances staged by theatre companies from various European countries, the festival features the opening *Community Play*, in which citizens enact town life. Moreover, there are the *Teatro delle case* performances, in which the artists met at the foot of the Sibillini and perform in Amandola's 34 small and tiny hamlets. The **Madonna delle Grazie feast** in Norcia is celebrated in the monastery of the same name on September 8. The event begins in the early afternoon, in the field in front of the Monastery with a picnic for locals and visitors alike, continuing late into the night in the company of *vinella* and the music of traditional instruments. **Chestnut festivals** are held in October at Montegallo, Valfornace and Montemonaco: chestnuts and traditional dishes which main ingredient are chestnuts can be tasted in these events.

Winter Festivals. The **Diamanti a Tavola** event in November at Amandola is a trade fair dedicated to the while truffle and other Sibillini foods specialities. **Faoni bonfires** is an festivals where the local people light bonfires at Norcia, on the evening of December 9, to commemorate the passage of the Holy House, transported by angels from Nazareth to Loreto. It is a feast that preserves an ancient pagan significance, linked to the mountain divinities, an exorcism of winter. In its Christian version, the feast is linked to 1291, when the Virgin Mary's Nazareth house was drawn up to the sky by angels and transported to Loreto, safe from Ottomans who occupied the Holy Land. Enormous bonfires were lit to guide the divine carriers to places where religious fervour was more deeply felt.

Gastronomy and Typical Products - Sibillini gastronomy can be sum up as "delicious by nature" because the cooking is rooted in the customs and rituals of transhumance, the use of crops from arduous mountain agriculture, the farmer's ability to gather and use herbs and fruits of the woods and forests, and skills in processing food resources.

Dairy products. The sheep farming has existed in the park territory since time immemorial and has long been the underpinning for the protected area's economy. When tenant farming became obsolete in the late nineteenth century, flocks and transhumance disappeared, along with many traditional local breeds of sheep, replaced with more productive Sarda, Massese and

Siciliana species. Fortunately, the related loss of animal biodiversity and traditional foods was less dramatic because some park areas are very remote, which mean that a few of local breeds (Appenninica and Sopravvissana) survived, as did ancient cheese production methods. The wealth of vegetation, which is composed of numerous plant species, present in the mountains confers the milk with traits that justify the fame some Sibillini cheese have enjoyed over the centuries. The ***Pecorino cheese*** and ***Salted Ricotta*** are the most ancient cheeses in the Sibillini and it dates back to the Emperor Augustus. The ***Caciotta*** is the term used for a small cheese eaten soft and produced directly by the farmer or shepherd with unchanged methods since Roman times. It is produced from ewes' milk from mixed breeds and it can be left to ripen for two years. The Caciotta "fresh cheese" is compact and white, while the Caciotta "ripe cheese" is also compact, but straw yellow in colour.

Cured meats. Pork has always been a cornerstone of the family economy for this rugged mountain area's inhabitants. It is no coincidence that the art of charcuterie has its historic roots precisely in Norcia territory. Knowing how to process and preserve pork, by transforming it into cured meats, was one of the key to survive the severe winter period. The continuous perfection through experimentation activity of pork processing, handed down from father to son, and from families to families results in meat delicacies. The processing of the pork takes place between December and January and nothing goes to waste. The pork is transformed into Ham, Loin, Shoulder, Sausages, and various Salamis. The ***Coppa***, which is composed by cartilage, scraps, and trimmings, snout and the more tender parts of the skin are minced, boiled and seasoned with salt, pepper, garlic, orange rind or pistachios, is a typical salami that must to be eaten immediately because it can only be preserved for a limited time.

A few unusual recipes have developed from this pork culture, including: stewed trotters seasoned with wild fennel, beam soup flavoured with ham leftovers and bone, and grill pig liver with the traditional bay leaf.

The lessons learned from this poor rural economy are now an important economic resource. In fact, there are more many pork butcher businesses in the park that still produced high quality hams and cured meats in the tradition was, controlling salt and time. The results are appreciated worldwide, as proved by now famous ***Prosciutto di Norcia***, which has obtained European certification with protected Geographical Indication.

The ***Ciauscolo,*** is the only cured meat that can be spread on bread, similar with French pate. It is a typical product from Macerata and Ascoli, and the Visso municipality area is its

undoubted homeland. It is ***produced*** from ground pork, garlic and aged grape syrup, cased in gut. It is like a sort of large, thick sausage, but it is actually a cured meat, aged for at least two months.

Cereals and vegetables are cultivated even at high altitudes and they have been a staple in local diet for centuries. Also today, many dish are based on ***lentils, grass peas, chickpeas*** and ***spelt***. While many traditional recipes, like barley soup with broth made from pig bones, have been lost or almost forgotten, today, many dishes are prepared, such as barley, grass pea and lentil soups, and soup with quadrucci egg pasta and chickpeas, as well as soup with bean and pork rind. Corn has also been a valuable food source in the park. In fact, a traditional food in the Ascoli park areas is ***Polentone***, a type of lasagne made by layering thin slices of polenta with sauce made from pork, or a "white" version, with truffles and sausage. The ***Castelluccio Lentils,*** which are rich in iron, protein and minerals, and are distinguished by their multicolour appearance and rather small size, are legumes grown to Castelluccio (Norcia hamlet). They are harvested in July and gathered by hand and they are cooked in 20-30 minutes because they have the thin skin. In June 2007, Casteluccio Lentils were awarded prestigious European recognition as a Protected Geographic Indication product, safeguarding it from imitation.

Mushrooms can be found in the forest, meadows and pastures from spring to late autumn. Saint George' mushrooms beds, which appear the end of April, are still referred to as "witching circles" since they appear as circle, almost devoid of grass in meadows and pastures. From the beginning of the summer through to the autumn, the meadows offer field mushrooms, such as parasol, honey and chanterelles which are used to prepare Frittata. Towards the end of the summer, the prized Caesar's mushrooms appears.

The Sibillini territory is an ideal habitat for *truffles*, developing its subterranean fruit-bearing structure thorough symbiosis with oak, chestnut, hop hornbeam, poplar and hazelnut trees. For the "extractions" of truffle, the people use trained truffle dogs to search it, but in the past, the sniffing out was assigned to pigs. Truffle has an intense aroma that features local dish. There are two type of truffle: the *Tuber melanosporum vittadinii*, which is commonly known as the "black truffle of Norcia" and the *Tuber magnatum pico*, which is a white truffle that is limited to small areas in the Ascoli Piceno section of the Park. The white truffle grows only in sandy soil, establishing a symbiotic relationship with oaks and other deciduous trees and its intensely aroma makes it particularly coveted and valuated to the extent that its market price is at least ten times greater than any other type of truffle.

Fruit, Honey, Pastry making and Beverage. In the Sibilini territory there is an ancient fruit that has always been cultivated – the *Rosa Apple*. This small, irregularly- shaped, and slightly flat apples is greenish in colour, nuanced from purplish red to pink. The very compact pulp is sour and sweet. The Rosa Apple is picked in October and can be kept until late April, the flavour improving with age. Compared to showier, larger, uniform apples, the Rosa risked extinction as it was not very competitive, but in the mid-1990s, the Sibillini Mountain Community, supported by Marches Regional Council, initiated a program for its recovery, and replanted many hectares of land. Park territory is particularly suited to production of top-high quality *honey*, because of the vast plateaux that provide a wealth of leguminous forage plants and because of the mild spring and summer climate that permits abundant bloom. Honey assumes different colours, trait, and flavours and names depending on which flower provides the nectar. As a result, the Park territory can offer acacia (sweet and pale), chestnut (slightly bitter and amber) and mixed-blossom honey (clear).

*Confectionery***.** Traditional sweets are often associated with holidays and celebrations. *Cicerchiata, Sfrappe* and *Castagnole***,** deep-fried and spread with honey, are prepared for Carnival. For Easter, on the other hand, *Ciambelle*, sweet or cheese sponge cake, are baked and usually served with cured meats. The cheese sponge cakes are a "non-sweet sweet", whose taste varies according to the amount of sugar and percorino cheese used. Autumn is dedicated to chestnut-based sweets. The various specialities included *Ravioli di Castagna*, made with grape syrup in the pasta, stuffed with boiled, creamed chestnut, and garnished with cocoa and coffee powder. The most unusual of the Christmas dessert is *Pizza alle Noci*, whose bread dough base is garnished with large repertory of ingredients: walnuts, almonds, dried figs, raisins, orange and lemon peel, cocoa, grape syrup and more. Many traditional sweets have a common feature: they are flavoured with *Mista',* a distillate made from wines that cannot be aged, than mixed with aniseed, fruit and herbs. Norcia makes an excellent *Chocolate*, including an original hand-made type using black truffles, according to a centuries-old Umbrian tradition.

The Sybille Menu represents a typical dishes collection based on local products, which is advertised by Park administration in order to promote the short supply chain between the agro-food producers and the restaurants present in the Park and to raise awareness among tourists regarding local culinary traditions. The menu describes the basic ingredients of the dish proposed by each restaurant and provide information regarding the raw materials origin place, production methods and the agro and zootecnica local companies' contribution to biodiversity conservation.

Moreover, in each restaurant menu there is also a list of other restaurants of the network, which are proposing Sibillini menu dishes, therefore the tourists can choose the next "stage of taste".

Woods and canyons, plateaux, springs, old towns at the foot of the highest peaks represent the features of the *Grande Anello dei Sibyllini*, a circuit trail that loops around the mountain on the paths and tracks that once served to ensure communications routes for farmers and shepherds. The circuit of approximatively 120km has nine sections and is covered by foot (see table no. 2.1.). A second, longer circuit, for mountain bike enthusiastic, reaches lower altitudes (see table no. 2.2.).

The aim of the scheme is to persuade the excursionists attracted by the peaks to explore the park's other places of interest, even on the outskirts. This way, apart from relieving the pressure on busier places, the season is extended – excursions at medium altitudes are possible in spring and autumn - generating work and income in the towns that visitors normally miss. Grande Anello dei Sibillini has enjoyed total support from the park authority since it opened in 1993. The circuit, also suitable for day excursions, integrates not only with a network of shorter paths that branch off the Grande Anello towards naturalistic and cultural sites of interest, but also with itineraries for the physically challenged.

Table no. 2.1. Nine stages on the Grande Anello dei Sibillini on foot

No. Stages	***Departure/Arrivals***	***Duration***	***Descriptions***
1	***Visso to Cupi***	**4.15 h**	The itinerary begins with the ascent of the west slope of Mount Careschio, reaching Macereto plains, than circles the deep Fosso La Valle and arrives at Cupi. Geological interest lies in the scaglia cinerea outcrops, whereas the botanical features are focused where conifer reforestation gives way to downy oak, beaches, broom and briars. The panoramas over Valerina and towards Mount Bove's imposing rocky faces are magnificent. The Oppio spring to Macerato section of the itinerary coincides with the park borders.
2	***Cupi to Fiastra***	***4 h***	After climbing Costa di Tranquilla, Campobonomo Valley is reached by skirting Mount Val di Fibbia halfway up its slope. The tracks continues up towards Mount Coglia ridge, and then descends reaching the village of Trebbio. Most of this stretch is in pastures at 1,000-1,400 metres in altitude. A vast reforested area is skirted in Campobonomo valley. During the descent, the

			views open to Lake Fiastra, Mount Fiegni and the Cjienti valley.
3	***Fiastra to Monastero***	***4 h***	The third Grande Anello stretch cuts across the ridge's north slope, descends to the Fiastrone Valley from Punta del Ragnolo, and crosses Rio Bagno and Rio Fessa, which provide water to the villages below. After a stretch of tarmac road, the walk continues immersed in pastures dotted with juniper, briar rose, helichrysum bushes and small beech coppices. One of the park's rare holm oak groves is found of the crest of Mount Cancelli.
4	***Monastero to Garulla***	***6 h***	The ridge connecting Mount Cancelli to Pizzo di Meta and Mount Sasso Tetto separates Fiastrone upper course from the Sarnano slope's complex hydrographic system. Characterized to the east by rock faces and deep valleys, the ridge tapers gradually westwards into meadows and crops. A huge range of varieties blossom here in springtime.
5	***Garulla to Rubbiano***	***4 h***	The trail crosses Mount Amandola's deeply furrowed east slope, then wends down to the Ambro Valley. Crossing the ridge down from Mount Priora leads to the Tenna valley. The trail explores the Sibillini's two most famous canyons.
6	***Rubbiano to Colle di Montegallo***	***5 h***	The excursion is characterized by steep meadows and views of Mount Zampa and the deep Aso valley, reach after passing Isola San Biagio, the largest valley on the Sibillini's east slopes. This stage begins on the old Tofe-Altino road, looking out over the Montagallo slope and proceeds through a coppice to meadows, where Mount Vettore appears for the first time. The mountain's spectacular east slope is furrowed with sharp deep gullies.
7	***Colle di Montegallo to Colle le Cese***	***6 h***	The journey continues at the foot of Mount Vettore's eastern slope, crossing the great Casale and Colleluce straits. Once on the southeast slope, the next stretch is through a vast reforested pinewood. There are views of the limestone faces soaring above the wood. At Forca di Presta there are extensive views of the Tronto valley, the Laga Mountains and the Castelluccio plains.
8	***Colle le Cese to Campi Vecchio***	***6.30 h***	The longest stretch of the Grande Anello coasts the Castelluccio plains, where views are set against the Cima del Redentore to the west. The Castelluccio plains are the Sibillini's largest tectonic depressions; the woods that used to cover the area were felled in the recent centuries to create pastures and farmland. From Forca di Giuda, the highest point of the Grande Anello at

			1,794 metres in altitude, the descent is on the west of the ridge, slopping down from Mount delle Rose. The last section is in the beech woods.
9	***Campi vecchio to Visso***	***4 h***	The last part of the Grande Anello is short and returns to Visso's old centre. From Campi, the trek crosses the Mount Macchialunga-Monticello saddle. After crossing the Casali dell'Acquario meadow, the Visso valley appears next, with a stretch of dirt road along its length returning to Visso.

Source: elaborated by the author

Table no. 2.2. Five stages on the Grande Anello dei Sibillini by mountain bike

No. Stages	***Departures/Arrivals***	***Trails km***	***Description***
1	***Visso to Fiastra***	***32***	The trails stars on the tarmac road to Ussita and climbs to Tempori, continuing up toward the hamlet of Casali. Before the village, there is a left turn onto a dirt road that climbs up to Pao Plians, where there is a fork. Bearing left, the track crosses the Pian Terrena and Pian del Capriolo meadows. From Mount Coia, a long series of hairpin bends wind up to Trebbio the home of Fiastra town council.
2	***Fiastra to Amandola***	***40***	The ride starts by descending towards Lake Fiastra and continues in the direction of Aquacanica. At a junction near fountain, there is a left turn going up towards Prati di Ragnolo and then up again to Santa Maria Maddalena junction. Here, there is a right turn and a gentle downward slope to Pintura di Bolognola. From the clearing, a dirt road takes down to Casale di Vallecaprina refuge and the village of Garulla, which is near Amandola.
3	***Amandola to Montegallo***	***34.5***	The ride starts on the road for Comunanza; before the stadium, there is a right turn next to the Tenna, leading to Ponte San Giacomo and Tre Ponti. The journey continues towards the Infernaccio canyon, then bears left towards the hamlets of Sossasso, Casa Lingi and Colle Regnone. Isola San Biagio and Montemonaco are connected by tarmac road. Another dirt road and a brief stretch on the provincial road lead to Montegallo, and from here to the hamlet of Propezzano. The road, alternating tarmac and dirt, crosses a wood to reach the hamlet of Colle.
4	***Montegallo to Norcia***	***39***	The start is on a dirt road that changes to tarmac at Passo di Galluccio. Continuing on tarmac in the direction of Pretare, there is a right turn at a

			junction, then a steep climb to the Forca di Presta pass. Here, the dirt road on the left skirts the ridge up to Colle le Cese and the Forca Canapine pass. A path on the left crosses the densely wooded Canapine valley and proceeds to the town of San Pellegrino. After the town, the ride continues to the Santa Croce pass then descend in the direction of Norcia, passing through the hamlets of Casciolino, Case le Grotte and Madonna Bella.
5	***Norcia to Visso***	***30***	From Norcia's Porta San Gionanni Gate, a road climbs to reach a path. After another stretch of tarmac, there is a climb up to Forca di Ancarano. Passing through the hamlets of Piè la Rocca and Capo del Colle the trail reach Campi, coasting the church of San Salvatore to continue on dirt road. Before the Madonna della Croce hermitage, the road follows the humpbacks to Acquaro. There is tarmac road down towards Sant'Eutizio abbey, but before there is a climb to Collescielle, which then continues on a dirt road passing over the Mount Lungo ridge to reach the Colli dell'Acquario meadows. The dirt road running along the Visso valley leads back down to the starting point.

Source: elaborated by author

Many ecotourism activities can be conducted in the National Park of Sibillini Mountains, but ***hiking*** and is the most popular as well as the most practiced. ***Trekking*** enthusiasts will be spoiled for choice. Crossing the massif from north to south takes 3-4 days if the itinerary is limited to the park's central section, and 5-6 days if it includes the minor surrounding peaks. The Umbria and Marche Sentiero Italia (which coincides here with European Long Distance Path E1) touches on Forca Canapine, Castelluccio and Visso, but leaves out the centre of Sibillini. The Grande Anello dei Sibillini, a 120km foothill circuit, accessible in some sections for physically challenged, was described in the section above. ***Footpaths*** **-** besides the Grande Anello dei Sibillini, the park has a vast network of paths that are normally accessible without difficulty from May to end of October. In the lower park's areas, there are itineraries that are easy even in winter. Visitors who prefer not to venture alone into the mountains can seek park and excursion guides in any of the towns. For rock, ice and ski-tourism itineraries, on the other hand, visitors must apply to mountain guides serving the Marches, Abruzzo and Latium. ***Cycling and Mountain Biking*** – the steep, demanding tarmac around the Sibillini is an important field of action for the well prepared cycle tourists. The Castelluccio plains represent a better destination for cyclists who are not found of steep slopes. The proliferation of tracks, now offer challenges for mountain bikers, for whom the

special Sibillini Grande Anello in Mountain Bike trail was devised. ***Free flight*** (paragliding and hang-gliding) - in recent years, Castelluccio has become one of the most popular location for free flight. Pilots from all over Europe visit Pian Grande and Pian Piccolo from spring to autumn. There are two schools in operation. ***On horseback*** – the Sibillini's grassy plateaux, paths and cart tracks are also ideal for excursions on horseback. Tourists can find a numerous specialist centres. ***Canoeing and rafting*** are located on Corno and Nera River, on the Umbria region side the Park, because the rivers are appropriate for these sports. ***Mountaineering and rock-climbing*** are two activities that are practiced all year. The most visited rock faces are Pizzo Del Diavolo's east slope, Mount Vettore's Piramide slope and the east and north faces of Mount Bove. In addition, the Sibillini crests and canyons offer the axe and crampon climber itineraries from December to March. **Caving and canyoning** – through modelled by karstification, the Sibillini massif does not have especially important caves. On the other hand, there are ravines cutting across the groups's northern and eastern slopes. Here, canyoning enthusiasts can enjoy demanding itineraries. Less demanding – more recreational – routes penetrate the Infernaccio and other gorges. ***Downhill skiing*** - five ski resorts are operational on the Sibillini slopes: Bolognola, Sarnanao, Monte Prata, Frontignano di Ussita and Forca Canapine. ***Cross-country skiing*** - the Castelluccio plains offer skiing on short beaten circuits or moving freely over vast snow covered expanses. Beaten tracks exist at Forca Canapine in the Pantani area, and circuits at Ragnolo plains. Trails off the beaten track are also possible in Gardosa plain and Val Canatra valley. ***Ski-tourism*** is predominantly in the Central Sibillini massif. The most popular tracks lead to the Zilioli Refuge and to Mount Vettore from Forca di Presta and Foce.

2.2. The analysis of ecotourism indicators of NPSM

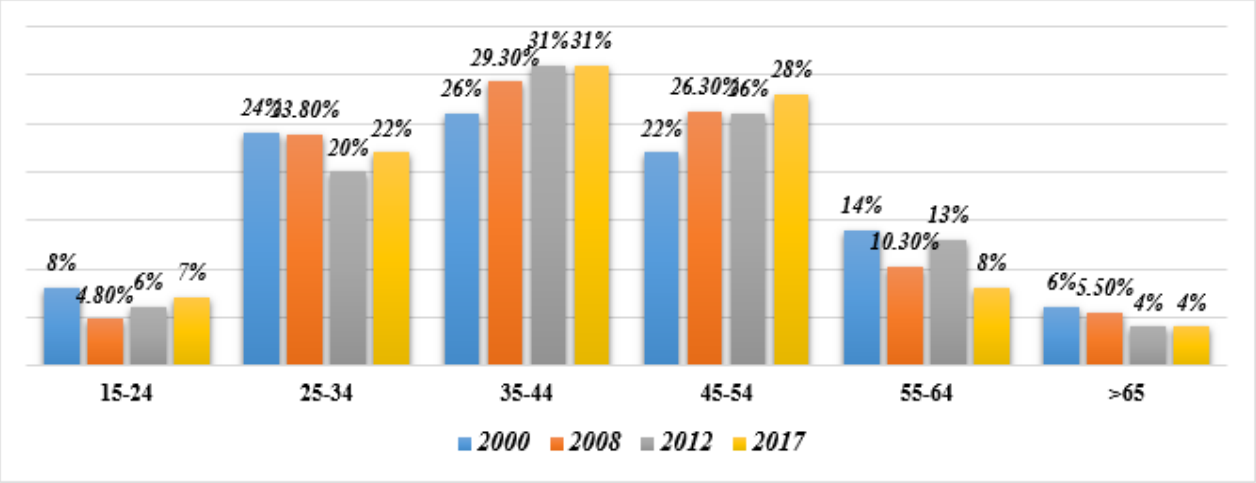
An important role in the evaluation process lies with the management of the protected area, whose initiatives must relate to the environment and sustainable development (eg rehabilitation of natural resources and tourism infrastructure), accessibility and mobility (traffic, congestion). At the same time, it must be assessed the satisfaction of tourists periodically during their stay (identifying the profile and behaviour of tourists, the level of expectations) and their departure (assessing the extent to which the tourist benefit was in line with the visitors' expectations if the destination image was changed during the visit). In addition, an important role in the implementation of the system is the measurement of the impact of tourism on the economy, the environment and the quality of life, taking into account the perception of the local people about the effects of tourism, its advantages and disadvantages, opportunities for creating new jobs, public

services. These impact assessments, based on quantitative indicators, will make it possible to assess performance and make the best decisions to correct the malfunctions, given that the quality management of tourism destinations will remain a permanent objective.

2.2.1. Ecotourist profile of NPSM

In order to be able to obtain information on tourism at the local level and provide descriptions of its characteristics which are not available from official statistics, NPSM administration has undertaken direct surveys on visitors through questionnaires. The main objective is to know, with a direct approach, the *tourist profile* of the protected area, indicating expectations, preferences, opinions and behaviour of a tourists visiting the park. The questionnaires were structured by the park management and administrated by park guides and visitor centers representatives. A first survey was conducted in 2000, on a sample of 234 tourists, on the first application for the European Charter for Sustainable Tourism. The second survey was carried out in 2008, on a sample of 443 tourists. The third survey was carried out in the years 2011-2012, on a sample of 313 tourists. In addition, the last survey was conducted from 2014 to 2017, on a sample of 319 tourists. The last three surveys, instead, were conducted as a request for the renewal of the European Charter for Sustainable tourism. However, it should be noted that the questionnaires were all collected in the months of June, July and August, therefore provide information on tourism during the summer season.

Figure no. 2.2. Tourists' Age visiting the park 2000; 2008; 2012; 2017



Source: elaborated by author

The data from figure no. 2.2.indicate that, the percentages of tourists with the age between 35-44 and 45-54 years old had constantly increased, and represent more than 50% from total, and

those of tourists with age between 15-34 and higher than 55 years old fluctuated during the years. It might be concluded that the age of tourists between 35-54 years old represent an important characteristic of the NPSM's visitor profile, followed by the age group 25-34.

Regarding the gender of the tourists profile visiting NPSM, it might be concluded from the data indicated by the figure no. 2.3., that males overweighted the females, with percentages that increased between 60% and 63% over the period 2000-2017.

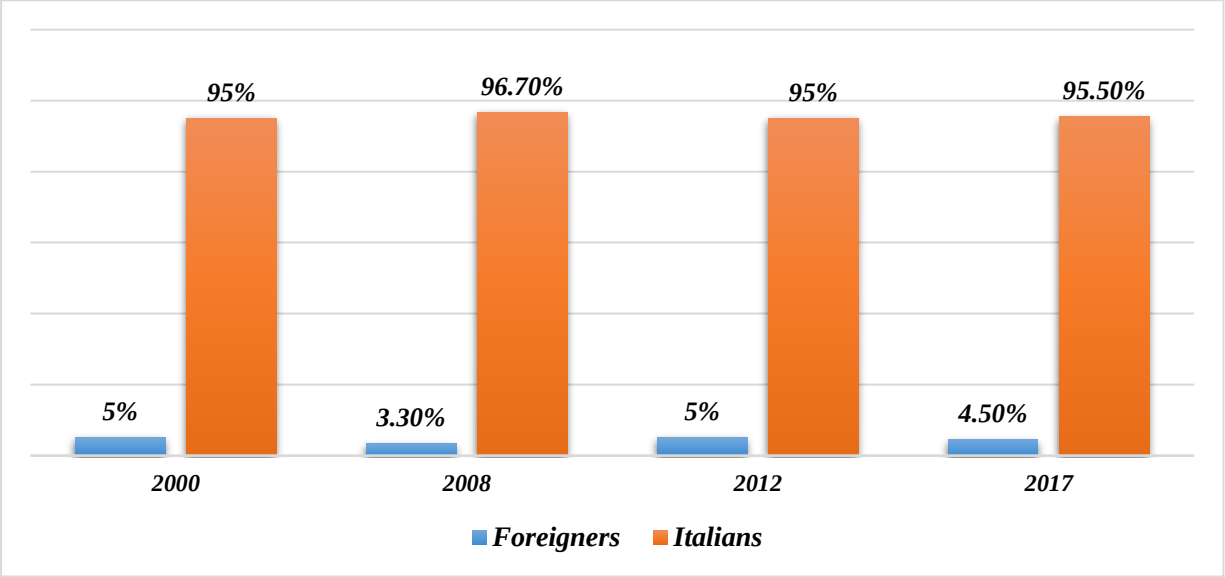
Figure no. 2.3. Tourists' Gender visiting the park 2000; 2008; 2012; 2017

Source: elaborated by author

In terms of tourists' origin visiting the park (see Figure no. 2.4.), more than 95% are Italians and only a small percentage from abroad. It should be noted that the low percentage of foreigners is also due to the non-administration of questionnaires by some employees, because the latter do not know English language, even if the questionnaires in foreign languages have been elaborated by the park management. The Italians come mainly from the Marche, Umbria and Lazio regions, followed by Emilia Romagna and Lombardy, while foreigners come from Holland, Belgium, Germany and the United Kingdom.

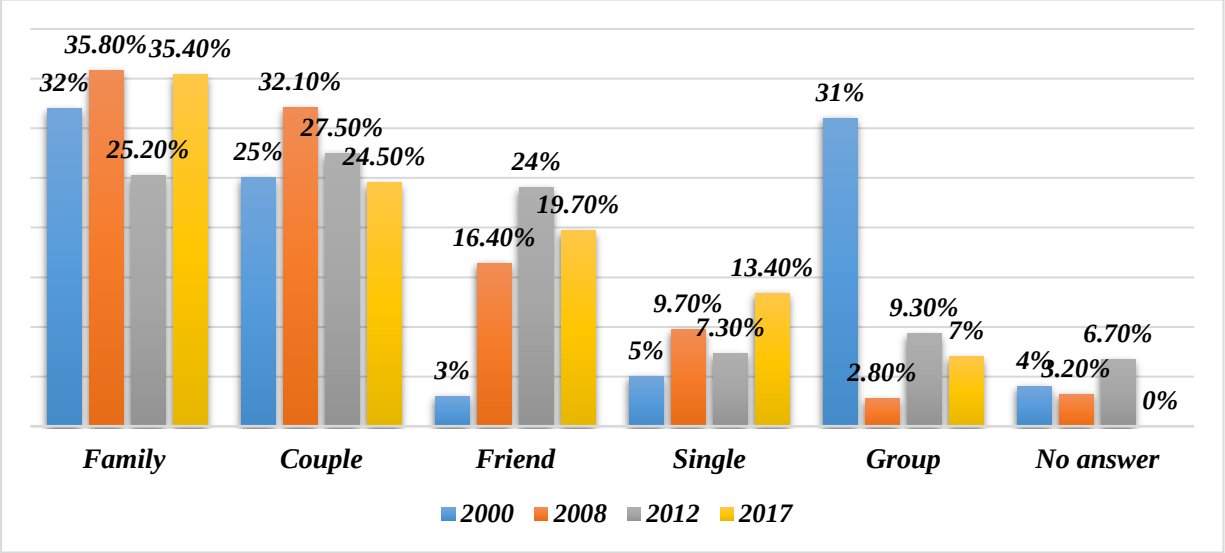
From the questionnaires completed over the years it emerges that tourists in the park traveled with their family or as a couple (see Figure no. 2.5.). Only in 2000 it is noted that 31% of tourists traveled as a group, but now it is no longer the case because the percentages are very low and range from 2% to 9%. It can also be noted the rise of single tourists from 5% in 2000 to 13,40% in 2017 and the increase of travelers together with friends from 3% in 2000 to 19,70% in 2017.

Figure no. 2.4. Tourists' origin 2000; 2008; 2012; 2017



Source: elaborated by author

Figure no. 2.5. Tourists' group size visiting the park 2000; 2008; 2012; 2017



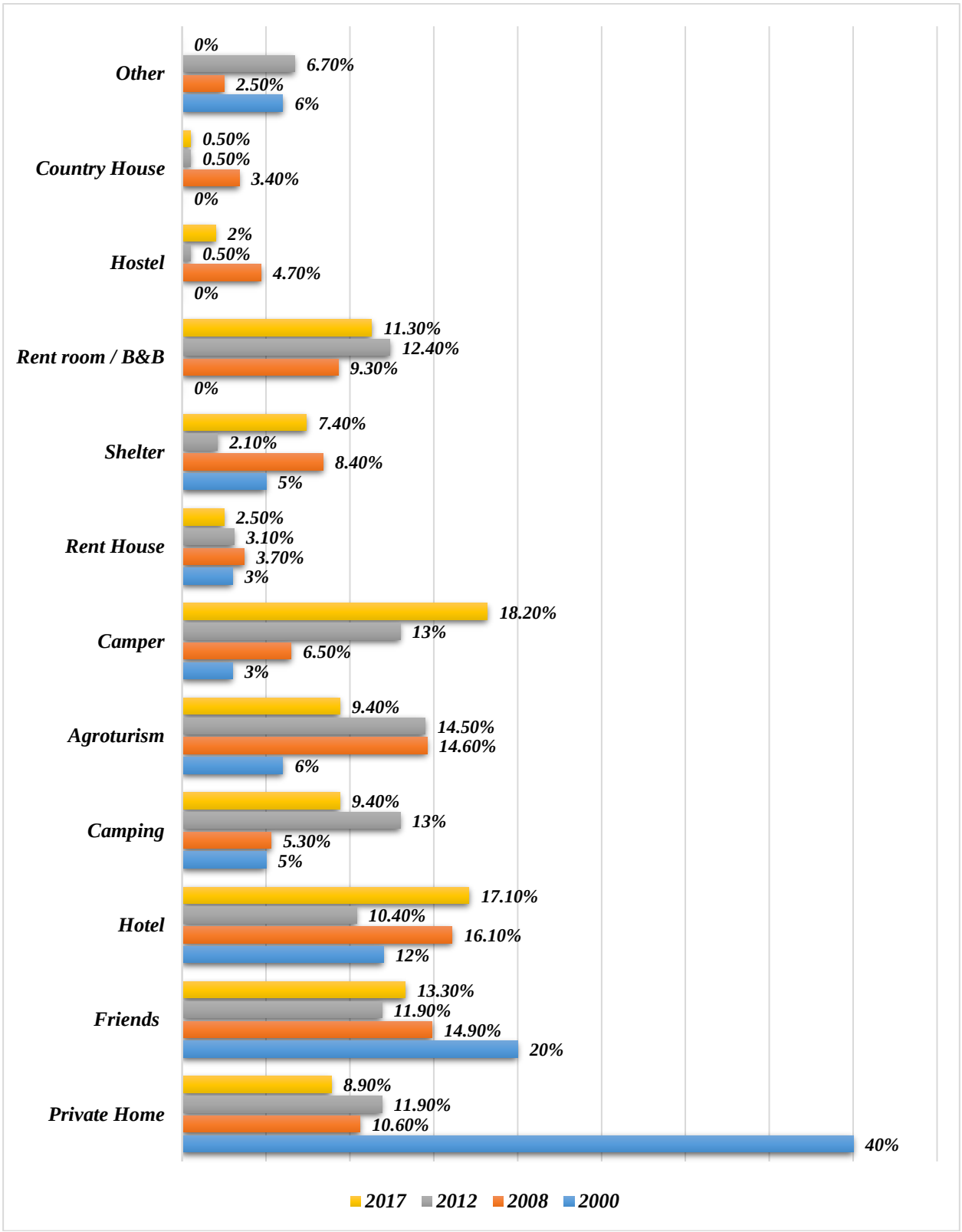
Source: elaborated by author

As shown in the Figure no. 2.6., the types of accommodation preference of tourist's visiting the park have changed over time. In 2000, second homes (40%) together with facilities provided by friends or relatives (20%) represented the preferred accommodations for tourists to spend summer holidays and, moreover, it also represented a very good economic income for local communities.

Today, it is no longer the case for two reasons: the first is given by the increase in the cost of maintaining second homes and the second is represented by the fact that in the world the culture

of traveling and the desire to discover new places have been increased, thus discouraging tourists from spending holidays in their second home.

Figure no. 2.6. Accommodation Types preferred by tourists visiting the park 2000; 2008; 2012; 2017



Source: elaborated by author

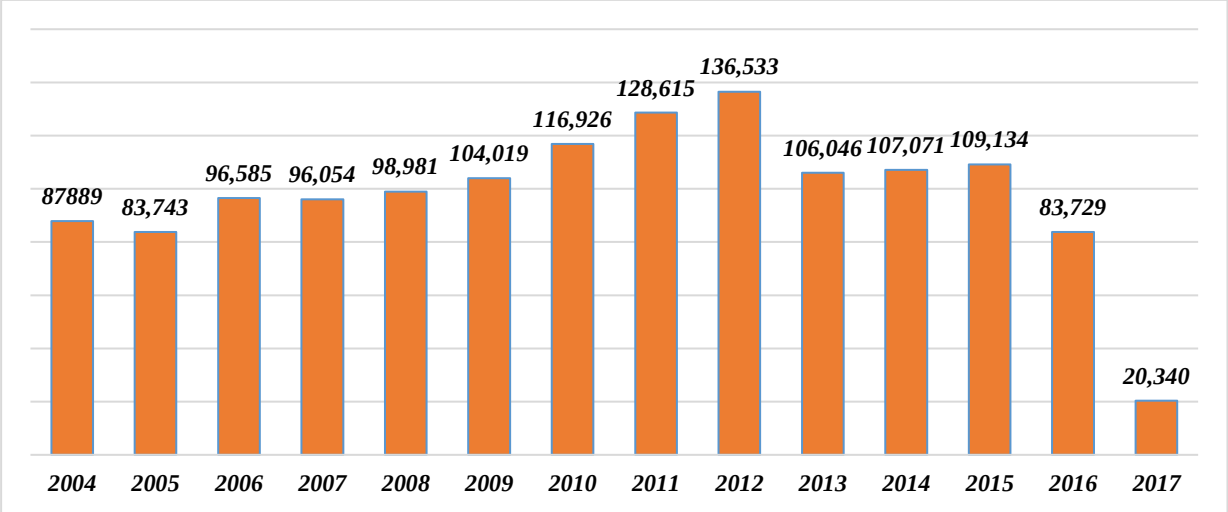
For these reasons, many have preferred to transform them into B & B's, houses for rent, hotels or holiday farms in order to gain economic benefits at lower costs. All this is confirmed by the increase in the use by tourists of these types of accommodation, which took place after 2000, but also thanks to the laws on tax alleviation and the increase of tourism worldwide.

It can be highlighted that the use of the camper, over the years, has grown as a type of accommodation, because it certainly has a lower cost compared to others and there is the possibility of being able to move from one place to another, without any schedule or location restrictions. Even the use of the campsite has grown over the years, reaching 13% in 2012, but data from the last questionnaires indicated that only 9.40% of tourists continued to use it.

2.2.2. The evaluation of ecotourism demand indicators of the NPSM

Starting from 2013, the system for collecting data on tourist flows has been modified, the values included only the data relating to the ISTAT housing (National Statistics Institute) and excluded data regarding some extra-hotel types, such as second homes. Therefore, two analyses were performed, one from 2004 to 2012 and another from 2013 to 2017. As shown in the Figure 2.7., from 2004 to 2012, arrivals grew by 55.35%. This increase was due to the global increase of tourism, in general and, in particular, of ecotourism in protected areas, but above all by the rising trend of "daily tourism". Also from 2013 to 2015, arrivals increased, but to a lesser extent, by only 2.9%. Instead, a huge drop can be noticed in 2016, when the Park suffered two huge shocks caused by the two earthquakes, one in August and one in October. For this reason, since August 26th 2016 there have been no more tourist arrivals for various reasons - unavailability of facilities, fear from the part of tourists, relocation of the population, etc. As a result, the arrivals registered in 2016 amounted to 83729 with a decrease of 21.04% compared to 2013. The decrease was not so significant because the seismic events took place at the end of summer, the peak season for tourism in the park. Dramatic decrease of 80.82% was registered in 2017 compared to 2013, but it must be highlighted the fact that the arrivals in 2017, equal to 20340, were not detected in Arquata del Tronto, Bolognola, Castelantangelo sul Nera, Cessapalombo, Ussita and Visso due to the unavailability of many structures. From the two analyzes, it might be concluded that the arrivals have constantly increased and this is due to the fact that the park's management has elaborated and then implemented efficient strategies, based mainly on the enhancement and conservation of the area, in order to attract a specific tourist profile, characterized by respect for the environment and local communities.

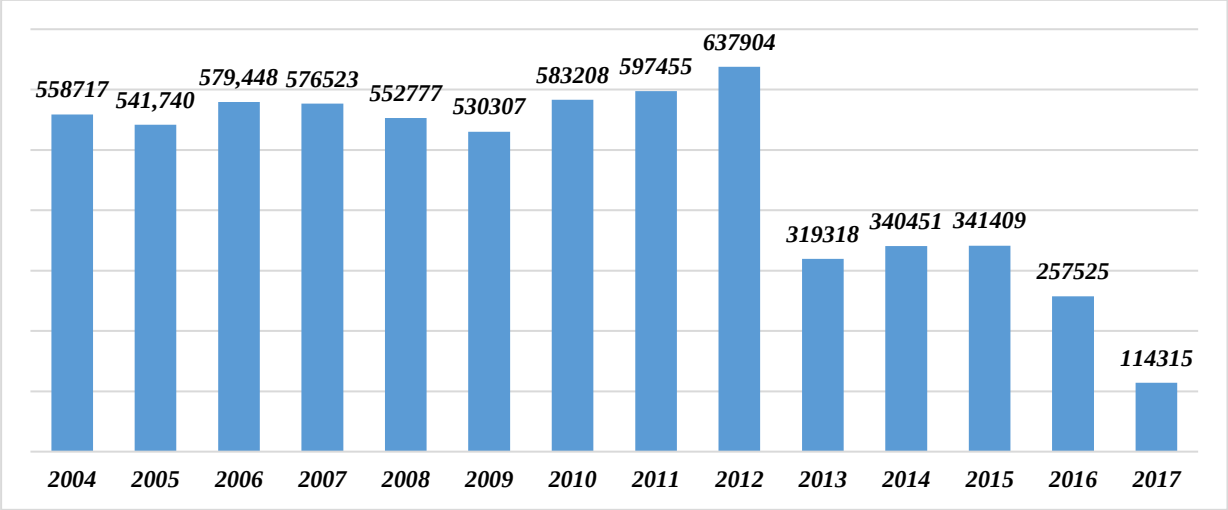
Figure no. 2.7. Number of arrivals in the NPSM 2004-2017



Source: elaborated by author

Even for overnights, from 2013 the values included only the data relating to ISTAT accommodations and, consequently, it have been performed two analyses, one from 2004 to 2012 and the other from 2013 to 2017. As can be seen from the Figure no. 2.8., from 2004 to 2012, overnights had a slight increase of 14.17%. With this increase, it can be noted that the average length of stay in the park has decreased, from 6 nights in 2004 to 4.7 nights in 2012, because the number of overnights spent did not grow in the same rhythm with the number of arrivals. This reduction is more attributable to the 2008 economic crisis. For the same reason, it has been noted that, from 2007 to 2009, there was a decrease of 8.02% with a repercussion on the average length of stay spent in the Park, going from 6 nights of 2007 to 5.1 nights in 2009. A recovery was observed in 2010-2012 period, with an increase in overnights of 20.30% compared to 2009, but with a decrease in the average length of stay in the park, from 5 in 2010 to 4.7 in 2012. Even here it can be noticed that, despite the increase in arrivals, tourists stay less and, consequently, it can be deduced that "daily tourism" is on the rise. Analyzing the before-shock period, the data indicate that, from 2013 to 2015, overnights increased by around 7%, with a slight rise in the average length of stay in the park, going from 3 in 2013 to 3.1 in 2015. The situation is completely different in 2016, the year of the seismic shock occurred on August 26th, because, from 2015 to 2016, overnights in the park decreased by 25% and, instead, from 2016 to 2017, by about 55%. In conclusion of the two analyzes and excluding the period after the shock, overnights increased steadily, but with a decrease in the average length of stay in the Park (figure no. 2.9.) due to the increase in daily arrivals.

Figure no. 2.8. Number of overnights 2004-2017



Source: elaborated by author

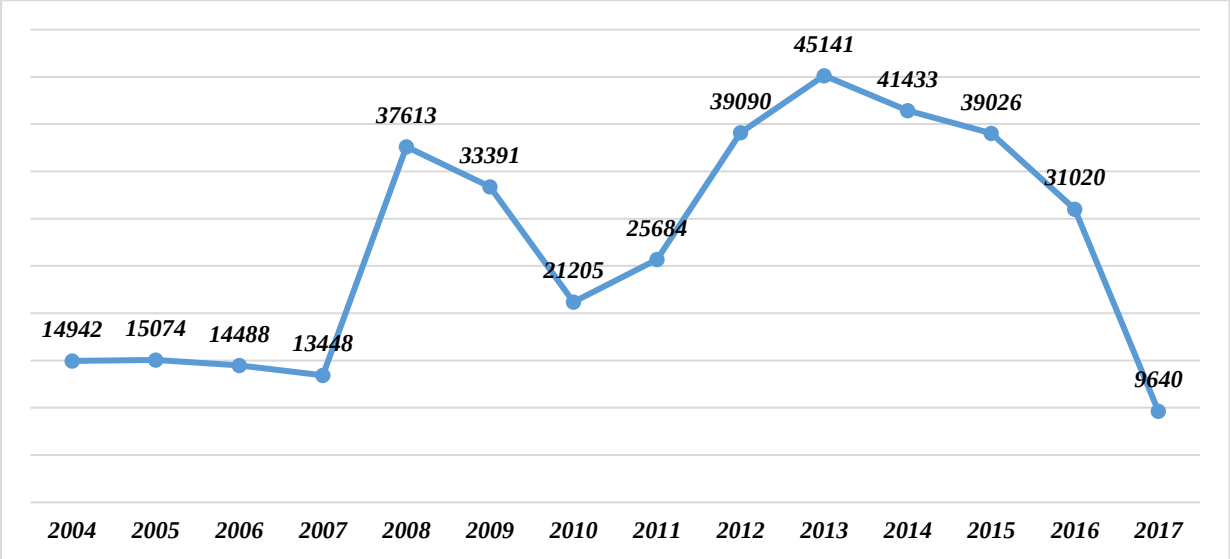
Figure no. 2.9. The average length of stay 2006-2017

Years	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*
No. of days-tourists	*6*	*6*	*5,8*	*5,1*	*5*	*4,6*	*4,7*	*3*	*3,1*	*3,1*	*3*	*5,6*

Source: elaborated by author

The data from figure no. 2.10., indicate that arrivals in information centers (park houses and visitor centers), from 2004 to 2017, do not have a constant trend. From 2004 to 2007, visits decreased by 10%, and then have an increase of 180% in 2008 compared to 2007. Since 2008, the year of the beginning of the economic crisis, onwards, there have been negative changes up to 2010, registering a decrease of 44%. It can be observed that from 2010 to 2013, the situation changed drastically with an increase of 113%, underlining that 2013 is the year with the most arrivals at the visitor centers compared to the period taken in consideration, 2004-2017. The years preceding the seismic shock, 2013-2016, represented years of decline for visits to the tourist information centers, with a 30% drop in 2016, compared to 2013. To conclude, it might be argued that these fluctuations over the years are due to different reasons. The first one is connected with the opening schedules of the visitor centers which are not in line with the programme of tourists. The second reason is represented by the fact that here are many daily tourists in the park who have a very specific goals, so they avoid visiting the information center. The third one is due to digitalisation, tourists preferred to take their information online. And finally, the last reason is that many tourists, even entering in the information centers, avoid writing their presence.

Figure no. 2.10. Tourist Information Centers Arrivals 2004-2017

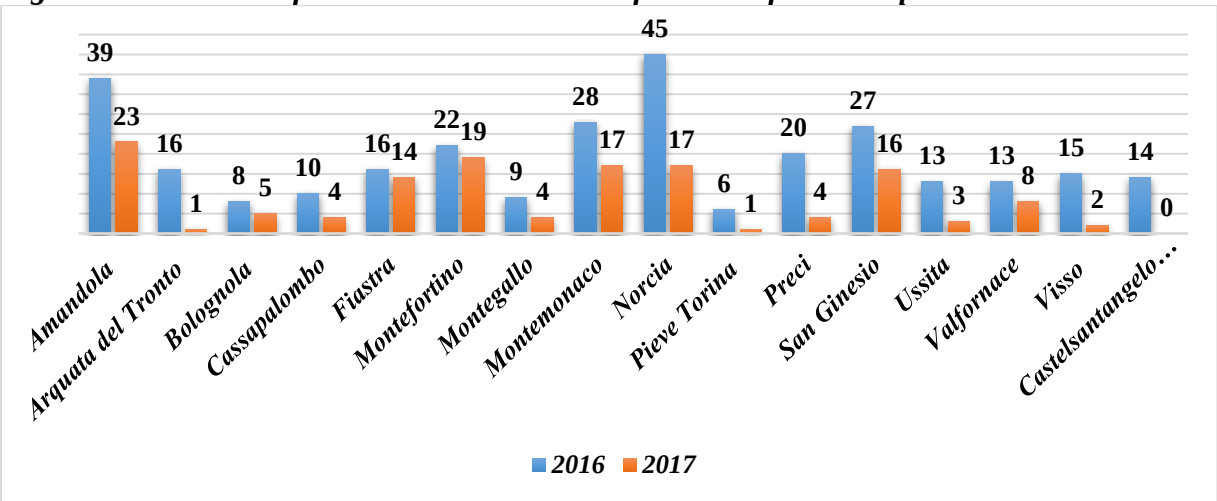


Source: elaborated by author

2.2.3. The analysis of tourism offer in the NPSM

Due to the shock caused by the earthquake of 26 August 2016, accommodation facilities, consisting of hotel and extra-hotel units, fell by 52% in 2017 compared to 2016 (see figure no. 2.11.), Currently, the municipalities with more accommodation facilities are Amandola with 23 units, Montefortino with 19, Norcia with 17, Montegallo with 17 and San Ginasio with 16. As a result, with the lack of these structures, tourists were forced to stay in adjacent structures or on the Adriatic coast and visit the park during the day, thus increasing the number of daily arrivals.

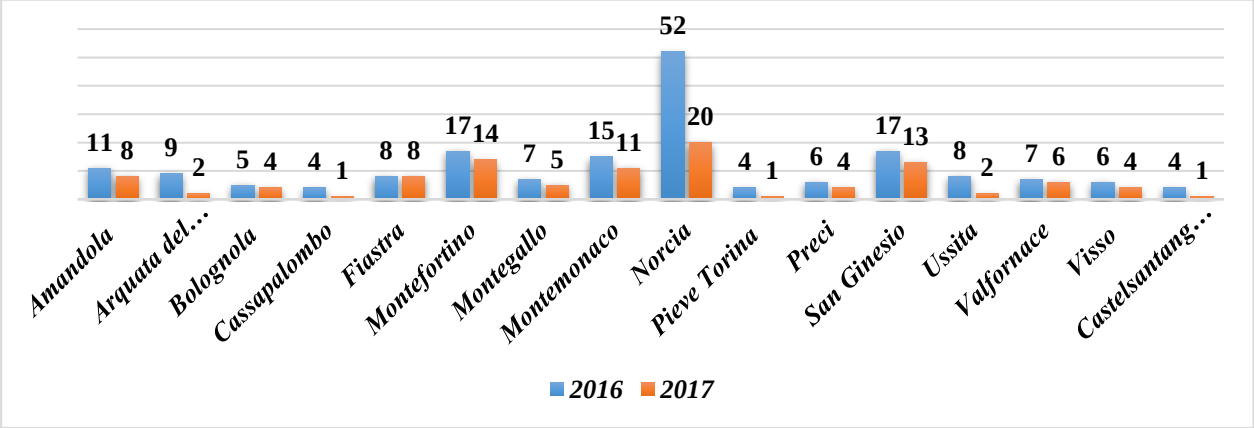
Figure no. 2.11. No. of accommodation units before and after earthquakes



Source: elaborated by author

As shown in the figure no. 2.12., even the catering facilities (restaurants, agrotourisms, etc.) after the shock, have suffered a 42% drop compared to 2016, due to the unavailability of the structures, but, fortunately, all the municipalities remained with at least one catering activity. Focusing on municipalities with more businesses, Norcia is in first place with 20 catering units, although compared to 2016 it has suffered a dramatic drop of 60%; followed by Montefortino, with 14 activities, San Ginesio with 13 and Montemonaco with 11. These last three municipalities, even if they have fewer catering establishments than in Norcia, in 2017, have suffered a more contained decline: Montefortino about 18%, San Ginesio about 24% and finally Montemonaco with 27%. Only the municipality of Fiastra had no declines, remaining with its eight catering activities. Instead, Arquata Del Tronto is the town with the greatest reduction in activity, around 80%, going from 9 activities in 2016 to 2 in 2017. The municipalities with a single exercise are Pieve Torina and Bolognola which experienced also a decreasing recorded of 70%.

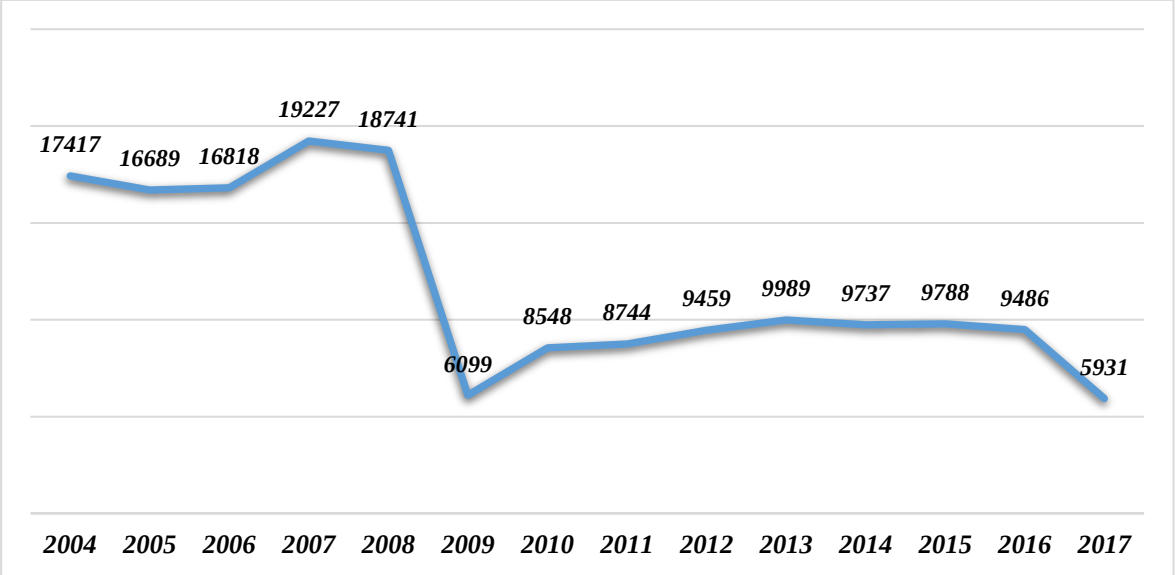
Figure no. 2.12. No. of catering businesses before and after earthquakes



Source: elaborated by author

Assuming that, starting from 2009, the system for register the number of beds has changed, as it have been excluded some extra-hotel types, such as second homes, it were performed two analyzes, one from 2004 to 2008 and another from 2009 to 2017. As can be seen from the figure 2.13., the number of beds, from 2004 to 2008, showed a slightly upward trend, equal to 7.60%. Still on the rise, from 2009 to 2016, they grew by 56% equal with a number of 9486 beds. In 2017, the year of the earthquake, only 5931 beds were recorded with a 3% drop compared to 2016. In conclusion, in the two analyzes, the number of beds has increased and everything is confirmed by the following chart which illustrates the exponential increase of accommodation units from 2004 to 2016 (see figure no. 2.14.).

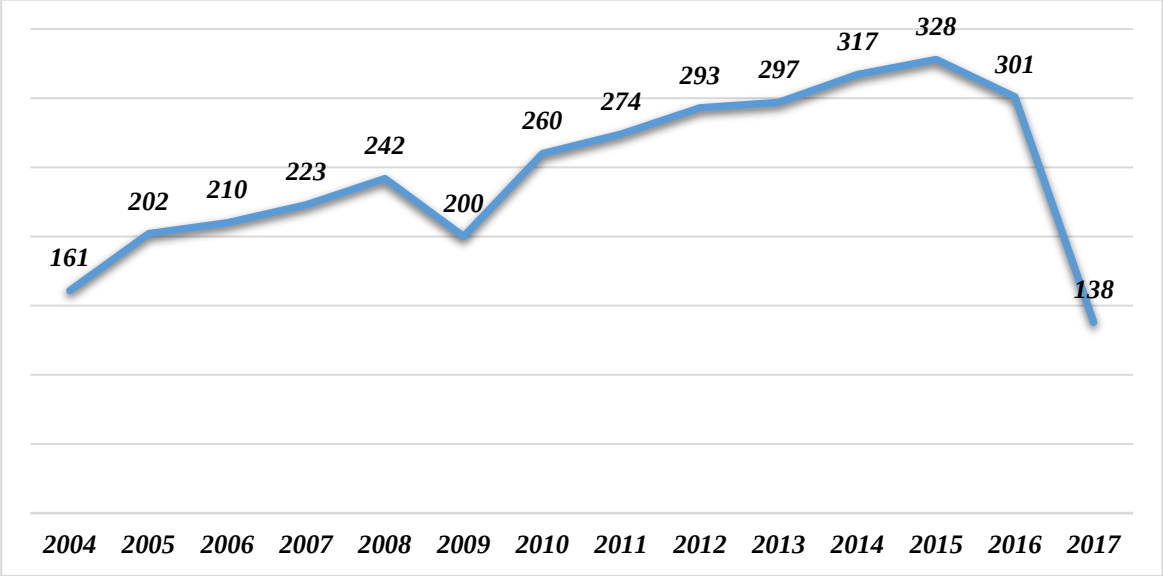
Figure no. 2.13. No. of beds in the NPSM in the period 2004 – 2017



Source: elaborated by author

As the graph illustrates, the number of accommodation units, divided into Bed & Breakfasts, holiday farms, hotels, hostels, campsites, houses for rent, etc., from 2004 to 2016, increased by 103.72%.

Figure no. 2.14. No. of accommodation units in the NPSM in the period 2004 – 2017



Source: elaborated by author

This obvious increase has occurred for two reasons, the first is the introduction of the law concerning the tax reduction of tourist activities, such as B & Bs, hostels, etc., and the second due to increase in tourism worldwide and, consequently, following the excessive demand, the park communities, in order not to lose economic income, have developed exponentially these tourist

activities. In 2009, the year following the crisis, the accommodation units decreased by 17.35% compared to 2008. A drastic decrease is noted in 2017, the year following the great shock suffered by the park communities, equal to 55% compared to 2016.

*

* *

Regarding the NSPM, its exceptional tourism potential, the multitude of relief forms and the harmony in which they are combined, the richness of historical monuments, art and architecture, ethnofolcloric potential, represent solid arguments for the development of ecotourism. At the same time, the results of analyzing the information on the size and structure of ecotourism equipments and flows show that there is enough space for improvement in the field.

CHAPTER 3. ELABORATING AN ASSESSMENT MODEL REGARDING THE DEVELOPMENT OF GOODS AND SERVICES ECO-SUSTAINABLE OF LOCAL COMMUNITIES WITHIN THE PROTECTED AREAS THROUGH ECOTOURISM

The process of developing eco-sustainable goods and services in local communities in protected areas through tourism is a complex one that involves a wide variety of resources, both specific and more general in the economy of the area (labor force, industrial or agricultural production etc.). Its effects may be positive or negative. The underlying issue is to choose the type of tourism that presents the most opportunities. Since ecotourism is one of the most appropriate to local community specificities, and this form contributes to the development of eco-sustainable goods and services, it is necessary to formulate a model for assessing the opportunities and limits of its implementation. Such a model aims to determine the openness, responsiveness to the development of eco-sustainable goods and services through ecotourism as well as the impact of its promotion.

3.1. Defining the selection criteria of the experienced local communities regarding the development of goods and services eco-sustainable of local communities within the protected areas through ecotourism

Preserving the environment is the preoccupation of ecotourism, one of the components on which it is based is educational, with a role in rising awareness of the need for protection and preservation. This form of tourism is attractive for tourists who respect the nature and culture of the local community.

At the same time, local communities can find sustainable development of goods and services by promoting ecotourism, as it is practiced on a small scale and helps preserve local resources (Tsaur, 2006). Local communities from protected areas must be directly involved in ecotourism activities, after an a priori assessment of their resources, an analysis to develop a set of specific eco-tourism assessment indicators.

It will be considered resources associated with the natural environment which can offer opportunities for ecotourism, such as: relief, forests, rivers, lakes, the sea, mineral and thermal waters, national parks and natural monuments, climate (temperature, precipitation, relative humidity, sunny days, wind forecast) etc. At the same time, a major factor to be assessed is the general quality of the environment, a fundamental attraction for tourists, the qualitative elements of the environment being the levels of water, air, soil pollution, noise pollution, environmental purity, agglomeration, development and maintenance of landscape in the public areas, the proper use of water areas, the setting up of sidewalks in the shopping areas, the availability of sanitary

groups, the night lighting of the streets, the value of the parks, the free and recreational spaces, the attractiveness and the degree of maintenance of the buildings.

The specific features of a community are also reflected in the anthropic elements that they offer and which constitute tourist attractions: traditional villages, crafts, archaeological, religious and industrial settlements, historical buildings, museums, gardens, and bridges, cultural, scientific and educational centers. Also, the cultural heritage transcends the local environment through traditional costumes and customs, festivals and ceremonies, artistic events and folklore, traditional crafts and traditional architecture, gastronomy, dance, music, theater, elements that are also the subject of the potential ecotourism assessment analysis.

Within the communities, there are also special attractions such as theme parks, botanical and zoological gardens, sports facilities, specialized thematic shows or various types of music that will be analyzed for evaluation.

At the same time, must be evaluated the specific infrastructure (represented by accommodation units - in terms of size, structure, form of ownership -, food, means of transport, recreational facilities, treatment facilities, etc.), general infrastructure (access ways in the area - air, water, water supply, gas, energy, commercial and service units, etc.) and the availability of a skilled workforce or which can be trained to work in all sectors of tourism (Saarinen, 2007).

Comprehensive analysis also involves investigating other determinant factors of eco-sustainable goods and services development through ecotourism: the potential of the domestic and international tourism market and its predilection to local specific tourist attractions; compatibility and interaction of ecotourism with other existing or emerging economic activities; the considerations of the local community regarding the opportunity for the development of ecotourism, based on highlighting its advantages and its possible negative impact. Also, the analysis involves establishing the level of involvement of existing local authorities with the role of supervising the development of eco-sustainable goods and services through ecotourism and the private sector; the existence of ecotourism certification criteria, financial capacity for investments in ecotourism development, as well as programs for the training of qualified ecotourism staff. The public health, in particular, sanitation and hygiene, and the limitation of epidemics in the area is another determining factor alongside the comfort and cost of potential tourists.

Therefore, the assessment of ecotourism resources and other determinant factors, listed above, will determine the ecotourism - as an instrument to develop eco-sustainable goods and services - potential of local communities.

The criteria for selecting local communities have been identified based on (see Annex 1): the organizational structure of the community (the existence of community leadership, local

council, tourism associations, trade associations, local non-governmental organizations); the minimum level of public services; natural attractions (caves, mountains, protected areas, waterfalls, rivers, seas, forests, natural trails, wildlife); the community's dependence on resources in the area (the main economic activities and the way in which the population earns their living); existing ecotourism activities (business number, ecotourism services); infrastructure / availability / transport; etc. Each criterion has been assigned a score, local communities being ranked according to the total score (see table No. 3.1).

Table no. 3.1. The score obatained by local community according to the selection criteria

Criteria	Score[1]	Acquacanica	Bolognola	Castelsantangelo sul Nera	Cessapalombo	Fiastra	Valfornace	San Ginesio	Ussita	Visso	Amandola	Montefortino	Arquata del Tronto	Montemonaco	Montegallo	Norcia	Preci	Pieve Torina
Organization structure																		
Subtotal	11	6	6	6	6	6	6	6	6	6	6	6	6	6	6	8	6	6
Goods and services eco-sustainable																		
Subtotal	30	25	25	25	25	29	25	25	25	27	29	27	25	27	27	29	25	25
Natural Attractions																		
Subtotal	11	6	6	7	6	7	6	6	6	6	6	7	6	7	6	8	6	6
Communities - resource realationship																		
Subtotal	9	2	2	2	2	2	2	2	2	2	2	2	4	2	2	4	2	2
Infrastructure/accessibility/transport																		
Subtotal	39	24	24	24	24	24	24	24	24	24	27	24	24	24	24	30	24	24
Existing ecotourism activities																		
Subtotal	25	13	13	13	13	16	13	14	13	13	14	13	13	14	13	16	14	13
Ethnic Component																		
Subtotal	11	2	2	2	2	5	3	3	2	3	4	4	4	5	5	6	4	3
Total	136	78	78	79	78	89	80	80	78	81	88	71	82	85	83	101	81	79

Source: elaborated by author

[1] score elaborate by author for all selection criteria

The selected local community according to the score is Norcia.

Norcia (Nursia in Latin) is an Italian municipality with surface of 275, 58 Km² and 4981 residents. The river are Corno, Torbidone, Sordo and Nera. In Norcia, there are nearly 1000 species of flora, over 200 species of vertebrates and about 50 species of invertebrates. The flora species are represented by: Agropyron repens, Anthemis tinctoria, Arctium minus, Bernh, Artemisia vulgaris, Asperula arvensis, Ballota nigra, Bromus sterilis, Campanula glomerata, Capsella bursa pastoris Med., Capsella rubella Reuter, Carduus pycnocephlus, Chaerophyllum aureum, Chelidonium majus, Chenopodium album, Chenopodium bonus hericus, Chrysanthemum parthenium, Cirsium aryense Scop., Conium maculatum, Cruciata laevipes, Dactylis glomerata,

Galium aparine, Geranium pyrenaicum Burm., Geum urbanum, Heracleum sphondylium, Heracleum sphondylium, Ternatum Brummit, Lamium maculatum, Lapsana communis, Lolium perenne, malva neglacta Wallr., Malva sylvestris, Medicago lupulina, Poa alpine, Poa trivialis, Ranunculus lanuginousus, Rumex crispus, rumex obtusifolius, Sambucus ebulus, Sambucus nigra, Sanguisorba minor Scop., Silne alba Krause, Stachys germanica, Stachys sylvatica, Stellaria media Vill., Sylibum marianum Gaert, Taraxacum officinaleWeber, Thlaspi perfoliatum, Trifolium repens, Urtica diodica, Veronica chamaedrys, Veronica persica Poiret and *Ribes uva-crispa.* The fauna species of vertebrates are represented by: Apennine wolf, wild cat, porcupine, fox, roe deer, wild boar, viper, marten, hare, skunk, badger, weasel, golden eagle, goshawk, sparrow hawk, peregrine falcon, owl, southern partridge, alpine chough and coral chough, gray crow, goldfinch, lark, quail, pheasant, golden oriole, black bunting, green fin, jay, nightingale, great spotted woodpecker, magpie, cuckoo, woodpigeon, Arctic plover, woodpecker, alpine finch etc. The fauna species of invertebrates are butterflies, beetles Duvalius ruffoi and Chrysocloa sibilla, crustaceans Chirocephalus marchesonii, Chirocephalus sibyllae and Paraleptophlebia ruffoli.

Norcia is composed by 27 villages: Agriano, Aliena, Ancarano, Biselli, Campi, Casali di Serravalle, Case sparse, Castelluccio, Cortigno, Forca Canapine, Forsivo, Frascaro, Legogne, Monte-Cappelletta, Nottoria, Ocricchio, Ospedaletto, Pescia, Pie' la rocca, Piediripa, Popoli, San Marco, San Pellegrino, Sant'Andrea, Savelli, Serravalle, Valcaldara. Norcia is surrounded by stonewalls (cinta muraria). Inside Norcia, there are anthropic attractions such as: Saint Benedetto church of XII century, Saint Maria Argentea Cathedral, Saint Agostino church, Town Hall of XIV century, the Castellina museum, which is a fortified residence built in 1554, the Temple of Norcia, the Saint Giovanni and Saint Francesco church of XVI century and the Madonna delle Nevi church built in 1500.

The Norcinerie are typical shops in Norcia that produce only pork meat specialities such as salumi-coppe di testa, lonze e capocolli, lardellati, hams. Moreover in Norcia there are other local products - cheeses - pecorino, ricotte, caprini -, apples; honey; truffle; marshmallow; chestnuts, chickpeas, flour-wheat, maize, bread baked in a wood oven, biscuit, mistrà (liquor) and boiled wine (vino cotto). Many of these typical products are IGP and DOP certificate.

Norcia is the most important tourism attraction of the Sibillini Mountains National Park. Its tourism is essentially self-centred and based on its own "values", which they are integrate perfectly with the protected area, where the Norcia municipality administration have been built a visitor centre with dimensions and equipment adapted to the tourist flows.

It is characterized not only by food and wine tourism, but also by religious tourism (also due to its proximity to Cascia). The Norcia municipality administration expanded the tourism

forms, focusing on congress and cultural tourism. In addition, they are concentrating on implementing policies and commercial protection of products ("Norcia Quality" brand, IGP and Parco brand for the lentil of Castelluccio and ham of Norcia).

Norcia has 13 hotels, 17 agro-tourism businesses, 9 bed & breakfast, 3 holiday homes, 1 hostel, 20 restaurants, 4 shelters. The Norcia municipality administration is working with Umbria region administration in order to increase the tourism demand. In 2016, until the earthquake produced on 24th of August 2016, the Norcia municipality in collaborations with the National Park of Sibillini mountains and Umbria Region administrations achieved the following objectives: elaboration of the Master Plan in order to valorised the "Natural Site 2000" (Siti natura 2000); improvement of tourist information services provided by the visit centers, museums and park houses; enhancement of agro-food production and local gastronomy promotion; improvement of the tourism facilities and equipment in connection with Grande via del Parco and the Village of Campi.

3.2. Designing and conducting the research

Efforts to make a comprehensive and accurate assessment of eco-sustainable goods and services development opportunities through ecotourism in local communities can be initiated inside or outside of the protected areas, the topic of evaluation being found in numerous studies of national and international bodies.

3.2.1. Modeling as a method of assessing the impact of ecotourism

As is the case in all sciences, we use models in the economy (Beker, 2011). Issues such as the potential, costs, benefits, responsiveness of local communities to the development of eco-sustainable goods and services through ecotourism are analyzed, and their correlation involves the design of complex models that take into account several variables.

In the literature, there are models used in agriculture, in the management of natural resources, forests, etc., and most involve qualitative research methods, using a form of the Rapid Rural Appraisal (RRA) or Participatory Rural Appraisal (PRA) methodologies (Chambers, 1994).

The two models have been recognized as important assessment techniques by both academia and the private sector, being used in various areas related to the rural environment - agriculture, ecotourism, irrigation, land ownership and use, etc. and characterized by (Chambers, 1995):

- optimization of exchanges - associates the costs of collection and processing with the exchanges between quantity, relevance, accuracy, timeliness and use of information;

- balance of trends / directions - a representative, balanced overview;

- triangulation - use of multiple methods or sources (usually three) for the same information;

- direct study with and from the local population;

- rapid and progressive study - involving conscious research, making decisions about the future based on what has been discovered so far as an adaptive research process.

Thus, various approaches have been identified in assessing communities from the perspective of the development of ecotourism that have led to the development of procedures for the identification, evaluation and implementation of successful operations by local communities based on ecotourism:

- The Tourism Good Practice Guide of the German Development Cooperation governmental organization, aiming to support the rural population in assessing the potential of sustainable tourism, biodiversity conservation and research development. (Steck et al., 1999).

- Self-administration program for communities that want to be assessed in terms of tourism development - Community Tourism Assessment Handbook, developed by the University of Montana, together with the University of Oregon.

- ecotourism development program of the Conservation International (CI) non-governmental organization, which provides an ecotourism assessment of local communities and proposes an implementation plan (Sweeting et al., 1999).

- community assessment procedures developed by The Nature Conservancy (TNC) international organization for the development of ecotourism that are subject to Site Conservation Planning (SCP) and applied by staff living in communities for a long period of time (TNC, 2001), etc.

The listed models are considered relevant as a base in elaborating the ecotourism assessment of local communities and the implementation of ecotourism as an instrument of developing eco-sustainable goods and services.

3.2.2. Research methodology

The main methodological aspects of the research refer to the pre-research process for the selection of local communities, and the following are to be analyzed at the research design stage: the type of research, the data source used (primary / secondary), the methods used for collecting

the information (investigation of secondary sources, observation, interview) and measurement, research instrument, population surveyed, sampling method and sample size.

The data collection and processing stage involves the exposure of the data collection mode and the quality control mechanism, as well as the processing and analysis methods to be used.

Research design

The evaluation model has an exploratory nature, circumscribed to a better knowledge of the researched aspects, being the product of a qualitative research aimed at deepening the topic of eco-sustainable goods and services development through ecotourism in the selected local community, Norcia. More, the results of the qualitative research represent the basis for the quantitative research designed to capture community attitude and intention on the potential development of eco-sustainable goods and services through ecotourism.

The types of sources identified by qualitative research, in relation to the stated purposes and objectives, have been grouped according to various criteria. Thus, according to the origin of the source, the internal ones were identified - local leaders, community organizations, local people - and external ones - NGOs, governmental agencies, local and national financial institutions, international forums, tour operators, associations, tourists .

Analyzing the type of information provided by the source have been differentiated sources of primary information - the population, some stakeholders in ecotourism activity, representatives of local authorities, institutions, etc. - and secondary ones - local, regional, national tourism and local communities publications, useful for model development.

As ways of collecting information have been used methods of direct research, respectively the collection of data and information directly from their bearer through semi-structured interviews and interviews with experts.

The purpose of the semi-structured interview was the volume and accuracy of the information regarding the development of goods and services eco-sustainable through ecotourism in Norcia, obtained through the individual interviews between the interviewer and the subject (interviewed), being recorded audio and subsequently subjected to content analysis.

The interview was based on a conversation guide structured on separate sections, depending on the topic (eco-sustainable goods and services development and their impact on ecotourism). It was not necessary to follow a rigid script, the order of the questions changed by the evolution of the interview, but with the obligation to go through all the subjects. Thus, 10 interviews were conducted with the owners of hostels and restaurants from the selected local community, on the basis of the conversation guides in Annex 2 and 3.

Three interviews with experts helped to deepen the investigation subject, the information gathered coming from those who have knowledge and expertise in the sector concerned. It have been selected only respondents whose competence and experience were not limited (Sibillini Mountains National Park director, counselors, deputy mayors, etc.) and for whom the conversation guides in Annexes 4 and 5 were used.

Although conducted on small samples - statistically unjustifiable, the interviews required a thorough selection of the samples, reflecting the structure of the analyzed community, in accordance with the particularities of the researched topic. Therefore, the selected sample totalized 43 people (see table no. 3.2.) and was structured by age (18-30, 31-50, 51-75), studies and sex (men and women).

Table no. 3.2 Sample structure

Studies	**MEN**			**WOMEN**		
	18-30	31-50	51-75	18-30	31-50	51-75
Diploma degree	4	6	8	3	5	10
Bachelor degree	3	4	2	3	3	2
Total	**7**	**10**	**10**	**6**	**8**	**12**

Source: elaborated by author

A recruitment (selection) questionnaire was used to complete the sample, whose role was to select the subjects involved in the qualitative research. Based on certain criteria, filter questions were formulated to remove the non-compliant subjects. The recruitment questionnaire asked questions about demographics, respectively age, income, residence, study level, work status, etc.

Information collection was conducted between February and April 2018 in Norcia on the basis of the Conversation Guides (Annexes 1, 2, 3 and 4).

3.2.3. Research results

The research aim was, in the first place, the analysis of the tools used by the Sibillini Mountains National Park's management, after the 26th of August 2016 earthquake, in order to maintain the local communities (including Norcia) tourism eco-sustainable goods and services on the market. In order to help the tourism destinations and the tourism businesses, after the natural disaster, the effective strategies and a set of directions are more essential. Based on the responses of the interview with the National Park of Sibillini Mountains' Director, it have been analysed the tools implemented by the Sibillini Mountains National Park's management:

Application of the Law "decrees earthquake".

Recruitment of new fixed-term staff. - One measure, in particular, has been addressed to the National Parks' Management of Gran Sasso, Sibillini Mountains and Lake Mountains because their territory has been affected by the seismic event. This provision stipulates the exception to recruitment which allowed to hire additional 10 units' fixed-term staff by National Park of Sibillini Mountains (....), in the years 2017-2018, in order to help the parks' management in the post-earthquake reconstruction phase. - (Park Director)

Integration of "decrees earthquake" with park's actions.

The delocalisation of the tourism information and hospitality systems. The Park's management has tried to adopt, more than measures, other various actions in order to promote eco-sustainable form of tourism, but above all to activate, as far as possible, tourism in the territory. The entire tourism offer system (including Norcia), has suffered changes, both in private and public sectors, information and accommodation systems, etc. Some examples, in this case could be, the restoration of the information and accommodation systems. Many visiting centres of the park have been damaged, but since the early stages after the earthquake, in agreement with the municipalities (including Norcia), the owners of these structures, who benefit from the financing of the park for their management, has been decided for their delocalisation. Where it was possible, there have been also a delocalisation of the visiting centres' exhibits. Where it was not possible to transfer the museum exhibits, it has been decided just for the transfer of the service. - Thus, have been identified safe areas in which it was possible to provide information and hospitality services, not only to tourists, but, in the early stages, also to the population itself, which, of course, needed to have information from the municipality's institutions about the state of things after the earthquake or even simply submit questions of inspection, etc. - (Park Director)

The assessment of tourism offer and demand. Tourism represents the primary source of income for the local communities from Sibillini Park (including Norcia), therefore this sector was immediately addressed by the authorities after earthquake, through the evaluation of the territory's tourism demand and offer. Not all the territory has been damaged in the same way, therefore the park's management made an assessment of usable tourism goods and services. It has been provided proper information about products and services that could not be used, because it suffered some damages or it could not guarantee their safe function. Therefore, the park management tried to provide an immediate picture of the current tourism offer, including Norcia. For this reason, it has been registered, even in summer, a significant decline in overnight stays and arrivals, but lower than expected. Regarding the facilities and services available, there has been a much higher

utilization than the last years because the park's management has provided a clear information about it. The tourist's response was highly positive.

In parallel, the park's management has launched competent actions in order to support tourism itself. Moreover, regional authorities, especially the chambers of commerce took actions, through the reconstruction funds after earthquake, provided material support to the tourism and agricultural activities (accommodation facilities, food and beverage enterprises, etc.) that encountered difficulties to continue their business. - In the park's management case, we are concerned about the goods and services linked directly or indirectly with all that regards the visitor experience, the hiking trail network and the parks own structures, such as the Grande Anello dei Sibillini's huts. Therefore, we tried to activate some projects which, some are already started, other which will begin in short time in order to overcome the shortcomings that have been emerged after the earthquake. - (Park Director)

Evaluation, restoration and security of the ecotourism natural attractions. The earthquake has led to some very important physical changes of the park; therefore, the management addressed two salient issues: one is related to sites security and the other one is related to sites restoration - sites that have not suffered any serious damages and were partially usable. The first step made by the park's management has been the assessment of the tracking trails, paths etc. It has been made a macroscopic investigation of some areas that have been suffered important physical changes, like Gole dell'Infernaccio, where the fall of a big landslide of Sibillini Mountains has been created a small lake on Tenna River. Practically, now there is a problem, both in terms of viability of the path, because had been changed the physical state, but also in terms of security regarding the stability of the slops that surround the path. Therefore, park's management has been acted in collaboration with municipalities, including Norcia in order to locate those areas effectively dangerous and then to close it by ordinances. More, - we have commissioned the regional college of the Alpine guides of the Marche region to control the viability of the area through a deeper geological examination. So, based on their findings, we have been restored what could be easily restored (e.g. removing the mountain rocks felled on the paths), we have been closed paths which demanded a need for extraordinary major maintenance interventions. - (Park Director)

Local Communities Collaboration.

-The local communities are practically working according to the laws and state norms emanated after earthquake. More than the norms and laws, many municipalities were active by voluntary collaboration through money or goods donations that enabled the services activations. For example, some visitor centres, after the delocalization, have been reorganized with the donations made by municipalities. Therefore, we can say that the "machine of solidarity" has made

a very important contribution in order to maintain or reorganize the consumption eco-sustainable goods and services. - (Park Director)

Develop a New Strategy Plan.

Renewal of the park's management membership of the European Charter for Sustainable Tourism. The park's management since last December, in the full emergency phase, has elaborated a general plan in order to implement the reconstruction measures in immediate and short, respectively long term. Regarding tourism, the elaboration of reconstruction plan coincided with the renewal of the park's management membership of the European Charter for Sustainable Tourism, which is a voluntary certification that provides a medium-term strategy for the development of the park sustainable tourism. - The Park's management is working with all stakeholders on this new strategy for the sustainable tourism development in the area which will contain inevitably all the post-earthquake interventions that have already been identified as needed for a restoration. - (Park Director)

The adoption of the Regulation for agricultural farm. - The concession of park's emblem is a qualifying element for this farms that operate from a perspective of sustainability and multi-functionality management. In practice, it can also be a tool of relaunching the agricultural sector as a sector closely linked to tourism. - (Park Director)

The other aim of the qualitative research were the analysis of Norcia local community perceptions (ecotourism business – accommodation, restaurants - owners, deputy mayor of Norcia) regarding the developing and maintaining the goods and services eco-sustainable on the market after the earthquake and their impact on ecotourism activity. Preliminary conclusions on research results highlight the fact that all interviewees are aware of the value of goods and services eco-sustainable developed by local communities, but after the earthquake from 24th of August 2016 a large variety of these goods and services eco-sustainable developed in Norcia are, at the moment, unusable.

The interview results reported that the ecotourism businesses (tourism equipment, restaurants) from Norcia in order to reduce the impact of their activities on the environment and to manifest social responsibility, have installed solar panels, through the financial help of municipality.

It can be argued that, based on the interviewees responses, the presence of certified local eco-sustainable products (IGP, DOP etc.) in the menu of the restaurant or agro-tourism businesses had a positive impact on raising awareness of tourists regarding the quality of products and the importance of short distribution chain in food industry related to tourism: - The customer

appreciates that the products used in the menu dishes of the restaurant are actually produced and certificated in the neighborhood. – (Park Director)

Another important aspects highlighted by the deputy mayor of Norcia have been represented by the activities undertaken by the local authorities for the development of eco-sustainable goods and services. Therefore, the municipality of Norcia, before the earthquake had developed the waste recycling system that it had been accepted by all citizens and tourists as a way to minimize pollution, but: - Unfortunately, from August 24th, 2016 after the earthquake all the activities implemented failed - (Deputy Mayor). In addition to recycling, the municipality has developed other eco-sustainable goods and services, not only for private citizens, but also for offices or public buildings: - In the elementary school we have installed a stupendous photovoltaic system, which it covered all the school electrical needs and beyond. Unfortunately, the elementary school has been rendered unusable - (Deputy Mayor). Fortunately, not everything has been destroyed, the station of recharging the electric cars is still operational and used by citizen: - The only thing that it has remained, outside the walls, which it has not been touched is the station of recharging the electric cars - . More, the municipality of Norcia - ….wanted to install other station to recharge the electric cars in Castelluccio, to demonstrate that our territory was used without being polluted – (Deputy Mayor).

In conclusion, despite the situation caused by the earthquake, the municipality of Norcia through national and European funds is trying to reconstruct and maintain the eco-sustainable goods and services developed before the natural disaster, as the deputy mayor reported: - … the Umbria region administration, through the financial department, have financed these reconstruction projects with more than 50 million euros. -

The SWOT analysis is relevant for assessing the opportunity of developing eco-sustainable goods and services through ecotourism within the selected community, and allows local residents to have an overview of the community with its strengths, with the issues to be improved, identifying phenomena that have not been studied, and issues that require other types of approach. Norcia is characterized by the presence of rich biodiversity, rare species, endangered and endemic species that, along with specific traditions, determine its world uniqueness. Norcia enjoys special attention from stakeholders and local authorities who have a common vision of the need for corrective actions and conservation. Local traditions are unaltered, precisely because the village is at the heart of the Sibillini Mountains National Park, away from urban influences, with a population attached to it that respects the environment and has a low anthropic impact on it. Local residents' hospitality is seen in the interactions they have with tourists, offering them accommodation in their own homes. They are aware of the benefits that tourism can bring to the

community by capitalizing on natural resources, but although there are tourist organizations, the workforce is not so specialized.

Table no. 3.3. SWOT analysis – strengths and weak

NORCIA	
Strengths	**Weaknesses**
- natural heritage of great European and world importance; - the presence of rare, endemic flora and fauna species of interest for conservation; - great attractiveness in terms of landscape and belvedere places; - traditions and specific customs; - the existence of attractions outside leisure activities in nature (festivals); - rich biodiversity in an almost intact ecosystem; - common stakeholders' view of the need for corrective actions; - support of local, national and international authorities; - the attachment of the local population to the national park; - low anthropic impacts on protected areas; - an important potential for tourist activities in nature: ecotourism, agro-tourism, etc.; - the existence of tourism organizations and NGOs that promote sustainable forms of tourism; - the possibility of private accommodation provided by locals; - promotion through travel agencies and on-line.	- high seasonality of tourist flows; - the fear of tourists visiting the park after the 2016 earthquake; - the temporary closure of some tourist accommodation facilities; - limiting business activity in the area; - lack / low number of eco-accommodation structures; - vulnerability of the park's ecosystems due to earthquakes; - inadequate infrastructure standards; - insufficient local training for re-launching and developing tourism activities; - Insufficient infrastructure to mitigate the negative impact of tourism; - lack of regulations limiting the access of tourists with unsustainable behavior; - poor awareness of the political factor towards the developmental assets through tourism activities; - insufficient familiarization of local populations with long-term benefits through sustainable development, to the detriment of short-term needs; - insufficient involvement of local communities in decision-making.

Source: elaborated by author

Although the ecotourism potential is an important one, few investments have been made in Norcia in accommodation facilities, especially eco-friendly, and in infrastructure that is inadequate in terms of standards after the earthquake of 2016. The waste management is just beginning, which makes the pressure on the environment not yet diminished, but on the contrary even accentuated, in the absence of regulations restricting access to the protected area for tourists and operators who have unsustainable behavior. Familiarizing the local population with long-term benefits through sustainable development to the detriment of short-term needs makes it continue to exploit the park's resources in an unsustainable way.

Like most ecosystems within a protected area, they are extremely vulnerable, especially when introducing new species that can lead to the extermination of endemic ones. The earthquake also had a major negative impact on the park's natural and cultural heritage. Thus, the character of

uniqueness and, implicitly, the attractiveness of the park for tourists who love nature is strongly affected. Although the tourism was very developed at the park level, especially ecotourism, there is an insufficient valorization of the protected areas, due to the slow pace of reconstruction after the earthquake. Tourist flows are influenced by high seasonality, the fear of another possible natural disaster, but also the insufficient use of natural resources and the limited number of eco-friendly accommodation facilities.

Table no. 3.4. SWOT analysis – opportunities and threats

NORCIA	
Opportunities	**Threats**
- growing demand for eco-sustainable goods and services; - involving local communities and developing them in a sustainable way; - the prerequisites for the development of ecotourism (unique sites at worldwide level); - the possibility of developing new forms of tourism appropriate to the sustainable development of the local community; - raising awareness and empowering the local community and tourists about environmental issues; - homogenization of tourist flows; - the involvement of stakeholders, the development of partnerships and the attraction of investments for the sustainable exploitation of natural and anthropic resources; - involving local communities and stakeholders in creating the premises for the development of eco-sustainable goods and services; - attracting community funds for the restoration of the protected area following the natural disaster; - increasing the involvement of the local population in the decision-making factor regarding the management of resources and benefits; - accessing funds through projects that protect and valorize the park.	- the possible negative impact on biodiversity through overburdening and degradation of the park ecosystems and the occurrence of new natural disasters; - the rapid disappearance of the traditional architectural patrimony, due to the possible earthquakes; - the possible restriction of access to numerous natural areas and the further restraint of access to already restricted zones; - less interest in local tourist offer in the context of the regional market and the fear of a potential natural disaster; - insufficient support and compliance with existing legislation; - the incoherence of tourism policies at national level; - reluctance on the part of locals to restrict traditional activities, through biodiversity conservation and conservation programs; - the lack of support from the aging population; - negative impact of tourists and tour operators on ecosystems by non-respecting the imposed regulations; - lack of an integrated vision for promotion on domestic and international markets.

Source: elaborated by author

In recent years, however, the practicing of sustainable forms of tourism has increased, especially of ecotourism in protected areas, and Norcia offers the prerequisites for development through its unique sites at worldwide level. The integration process through the involvement of the local community in the decision-making process starts to take shape, which is also highlighted in the efforts to attract European and national funds, to develop projects that support the activities of conserving and protecting the biodiversity, of reconstructing the affected areas after the

earthquake of 2016, the development of eco-sustainable goods and services, and the development of tourism infrastructure.

Local authorities together with national bodies have initiated and carried out projects to protect and valorize the park, which facilitates the development of sustainable forms of tourism, of goods and services and contributes to the sustainability of local communities. Through the development of ecotourism, tourist flows can be homogenized, creating new attractive circuits for tourists. Awareness and empowerment of the actors involved have the finality of protecting the environment, with the sustainable use of its resources. Integrated development implies the involvement of local authorities and the community as a prerequisite for attracting investment and creating partnerships that support environmental policies as well as sustainable economic development.

Political stability is needed in order not to create syncope in support of tourism policies at local, regional and national level. The steps for the integrated development of ecotourism in Norcia may be affected by the lack of compliance with existing legislation by tour operators and tourists, whose impact will affect the natural environment, which makes the reluctance of locals to be even stronger beyond the imposed restrictions on traditional activities. And, in the absence of an integrated vision to promote the area, more young people will be determined to leave the city, leaving behind an increasingly aging population.

The occurrence of a new natural disaster can cause irreversible changes to Norcia's biodiversity, which can lead to an extreme measure of restricting access to numerous natural areas with immediate repercussions on tourist flows. It should not be forgotten that the local community itself is part of the ecosystem and that the effects of natural disasters cause the disappearing of the cultural heritage - traditions, architecture, etc.

Qualitative research, conducted through the processing of information obtained in interviews with community members and the results of the SWOT analysis, provided the basis for the quantitative research that took place in April 2018 in Norcia. It aimed to assess the attitude and intent of the local community in the protected areas to four major steps in the development of eco-sustainable goods and services through ecotourism: minimizing environmental damage, minimizing socio-cultural damage, maximizing the economic benefits of local communities and operational and quality management.

The approach is essential for the researcher to identify and understand the position of residents regarding the use of ecotourism as a tool for balancing environmental conservation with development (Gursoy & Rutherford, 2004). Determined by beliefs and intrinsic factors associated with an individual's behavior, attitude may be favorable or unfavorable to an object, action, or

event, and reported to communities in protected areas may create a holistic view of its heterogeneity, in the present case on the development of eco-sustainable goods and services through ecotourism.

Intention is the direct result of assessing the behavior of a person with minimal external influences (Kuvan, 2005), and in the context of the development of eco-sustainable goods and services, this is associated with the behavior of residents in relation to minimizing environmental and socio-cultural damages, maximizing economic benefits to communities local and operational and quality management. Identifying community intentions facilitates the gathering of information on responsiveness to the development of eco-sustainable goods and services through ecotourism.

Quantitative research implied the administration of 62 questionnaires with two measurement scales (the attitude and intent of the local population) of the development of eco-sustainable goods and services through ecotourism. The statements were correlated with the issues highlighted by interviews with members of the community, each being attributed, according to the Likert scale, to one of the five gradations of the scale (total disagree, disagree, neither disagree nor agree, agree, total agree). To facilitate the interpretation of the data, the gradations of total disagree and disagree and the total agree and agree were associated, the neutral gradation neither disagree nor agree remained invariable. Descriptive statistics were used for data analysis, and the Spearman coefficient was applied to evaluate the attitude-intention relationship.

It was noted that there is a major interest (96.77%) for the energy conservation related to the relation with the minimization of the environmental damage in the protected areas and the fact that the preservation of the natural environment is wanted, can also be seen by the agreement (82.26%) on the minimizing environmental contamination by replacing chemicals (used for cleaning, land fertilization, etc.) with biodegradable ones, but also that more than two-thirds of respondents have a favorable attitude to water conservation and establish carrying capacity for ecotourism activities in local communities in protected areas. The same attitude is also manifested in reducing the amount of solid waste.

The almost unanimous positive attitude with percentages of 98.39% and 90.32% highlights the fact that residents want to preserve the cultural heritage and express the need for the integration of a code of conduct to minimize socio-cultural damage in management operations. More than 80% of those who develop eco-sustainable ecotourism products and services have a favorable attitude towards contributing to the development of local community through financial contributions or in the form of training programs for local staff / population. However, divergent opinions have been expressed regarding consulting the community and other stakeholders for respecting cultural values in planning and management activities (51.61%).

The sustainable development of the local community is a desideratum of the overwhelming majority, which has expressed its favorable attitude regarding the need to hire local community personnel (the unanimity of responses) and the acquisition of local goods and services (93.55%). Although divergences, favorable majority opinions (64.52%) were expressed regarding the acceptance of the negative impact of tourism as necessary for local development, but an unfavorable attitude (48.39%) regarding the emergence of investors outside the local community, to the detriment of those inside it.

Undoubtedly, the local population involved in the development of eco-sustainable goods and services wants to maximize the eco-tourists satisfaction by implementing the recommendations made after the analysis of the direct research based on the questionnaire (91.94%), the integration of ecotourism principles in the management operations (77.43%), and implementing best practices in the development of eco-sustainable goods and services through ecotourism by hired personnel (72.58%).

The degree of heterogeneity regarding the intent of locals involved in the development of ecotourism goods and services to minimize environmental damage compared to attitude is not much higher. The majority will support an energy conservation approach (85.48%) and encourage the minimization of environmental contamination by replacing chemicals (used for cleaning, land fertilization, etc.) with biodegradable ones (67.74%). Water conservation is a priority and 53.22% of those respondents want to establish support capacity for ecotourism activities in local communities in protected areas.

Not only the attitude is extremely favorable, but also the intention of residents to get involved in preserving specific traditions and protecting against the influences caused by tourism development (88.71%). However, it is noteworthy the strong fragmentation regarding the consultation of community and other stakeholders in respecting cultural values in planning and management activities (29.03%), contribution to the development of local community through financial contributions or in the form of training programs for local staff / population (51.62%), but also the integration of a code of conduct for minimizing socio-cultural damages in management operations (53.23%).

In terms of maximizing the economic benefits of the local community through the development of eco-sustainable goods and services through ecotourism, residents validated the need to hire local community personnel (93.55%), which can be correlated, among other things, with the acquisition of local goods and services (88.70%).

Table no. 3.5. The attitude and intent of the local population involved in the development of eco-sustainable goods and services through ecotourism

	The *attitude* of the local population involved in the development of eco-sustainable goods and services through ecotourism.			**The *intent* of the local population involved in the development of eco-sustainable goods and services through ecotourism.**		
	Agree (%)	**Neither agree nor disagree (%)**	**Disagree (%)**	**Agree (%)**	**Neither agree nor disagree (%)**	**Disagree (%)**
Dimension 1 - minimize environmental damage.						
1. Establish support capacity for ecotourism activities in local communities in protected areas.	27,42	3,22	69,36	40,33	6,45	53,22
2. Reducing the amount of solid waste.	33,87	4,84	61,29	40,32	8,06	51,61
3. Minimizing environmental contamination by replacing chemicals (used for cleaning, fertilization, etc.) with biodegradable.	16,13	1,61	82,26	27,42	4,84	67,74
4. Conservation of water.	22,58	4,84	72,58	32,25	6,45	61,29
5. Energy Conservation.	0	3,23	96,77	9,68	4,84	85,48
Dimension 2 - minimizing socio-cultural damage.						
1. Conservation of specific traditions and protection against the influences caused by tourism development.	0	1,61	98,39	6,45	4,84	88,71
2. Integrate a code of conduct to minimize socio-cultural damage in management operations.	6,45	3,23	90,32	40,32	6,45	53,23
3. Consulting the community and other stakeholders to respect cultural values in planning and management activities.	40,32	8,06	51,61	67,75	3,22	29,03
4. Contributing to the development of local community through cash contributions or in the form of training programs for local staff/ population.	8,06	8,06	83,88	40,32	8,06	51,62
Dimension 3 - maximizing the economic benefits of the local community through ecotourism.						
1. Employing local community staff.	0.0	0.0	100	3,22	3,22	93,55
2. Accepting eco tourists within the community.	16,12	3,22	80,66	12,90	4,84	82,26

3. Accepting the negative impact of tourism as necessary in local development.	32,26	3,22	64,52	27,42	4,84	67,74
4. The emergence of investors outside the local community.	48,39	1,61	50	40,32	3,22	56,46
5. Strong development of ecotourism, similar to mass tourism.	35,48	3,22	61,29	40,33	6,45	53,22
6. Acquisition of local goods and services.	4,84	1,61	93,55	8,06	3,22	88,70
Dimension 4 - operational and quality management.						
1. Integration of ecotourism principles into management operations.	19,35	3,22	77,43	37,10	4,84	58,06
2. Implement best practices in developing eco-sustainable goods and services through ecotourism by staff.	25,81	1,61	72,58	40,32	4,84	54,84
3. Maximize the satisfaction of tourists by implementing the recommendations made following the analysis of the direct research based on the questionnaire.	3,22	4,84	91,94	9,68	4,84	85,48

Source: elaborated by author

Concerning the intention regarding the tourist flows and the acceptance of the negative impact of tourism in the development process, an ethos of responses is maintained 40.33% of those surveyed do not intend to support the development of ecotourism similar to mass tourism.

Over 85.00% of the residents expressed their intention to get involved in maximizing the ecotourism satisfaction by implementing the recommendations emerging from the analysis of the direct research based on the questionnaire. The intention to integrate the principles of ecotourism into management operations, but also to implement good practices in the development of eco-sustainable goods and services through ecotourism by staff, although inferior to the expressed values of attitude towards them, falls within the positive parameters regarding the consent of the residents, with values of 58.06% and 54.84%, respectively.

As regards the link between the positive attitude of the residents towards the four dimensions of the ecosystem eco-sustainable products and services development through ecotourism and the intention followed by a positive behavior when acted upon, this is characterized by the aggregate average score between them. The average score was high in respondents' attitudes to minimizing socio-cultural damage (average = 4.15) and operational and quality management (average = 4.45) and relatively low, minimizing environmental damage (average = 3.88) and maximizing benefits economic development of the local community through the development of eco-sustainable goods and services through ecotourism (media = 3.63). However, the positive

attitude of residents towards the development of eco-sustainable goods and services through ecotourism does not imply that they will also engage in ecotourism-related activities.

Table no. 3.6. The results of the correlation tests between the attitudes and intentions of residents

Dimension	*Media score*		*Spearman* ρ	*P*
	Attitude	*Intent*		
Minimizing environmental damage.	3.88	3.31	0.393	0.001
Minimizing socio-cultural damage.	4.15	3.71	0.153	0.203
Maximizing the economic benefits of the local community through ecotourism.	3.63	3.33	0.630	0.000
Operational and quality management.	4.45	3.84	0.101	0.400

Source: elaborated by author

The Spearman test shows the significantly positive correlation between attitude and intent in two dimensions: minimizing socio-cultural damage (Spearman = 0.39, $p < 0.1$) and maximizing the economic benefits of the local community through the development of eco-sustainable goods and services through ecotourism (Spearman = 0.63, $p < 0.1$).

There is no significant correlation between attitude and intent in minimizing socio-cultural damage and operational management and quality. While most have shown favorable feelings, many have not shown the intention of engaging in operational and quality management. The same discrepancy can be observed in minimizing socio-cultural damages.

3.3. Developing a set of specific indicators in order to assess the level of ecotourism development based on the results interpretation

The methodological approach is based on a set of indicators with applicability in the development of goods and service eco-sustainable through ecotourism planning process, which can provide the necessary information for the local authorities and the tourism managers, indicators grouped in 4 important categories:

- minimizing environmental damages - by reducing waste, water and energy consumption, contamination;

- minimizing socio-cultural damages by collaborating with local communities so that their rights and aspirations are recognized / fulfilled, ensuring adequate education and introducing responsibility in the behavior of staff and tourists;

- maximizing the economic benefits of local communities - by hiring local staff, purchasing local products and contributing to the development or maintenance of local infrastructure;

- operational and quality management - through the ecotourism policy of the company and maximizing the ecotourist's satisfaction.

Minimizing environmental damage

Reducing solid waste. Waste generation and disposal have a significant negative impact on the environment - through inadequate resource consumption and limited waste disposal options and associated problems: odor, potential leakage that can contaminate water, carbon dioxide and methane emissions contributing to the emissions.

An ecotourism development encourages the classical organizational formula (reduction-reuse-recycling) with emphasis on reducing packaging use, demand for bulk purchasing, selection of low-packed products, controlled portions, use of recyclable materials, separation of waste, recycling of glass, plastic, edible oil, paper, aluminum, etc.

Thus, the most significant and simple indicator to measure how a waste disposal operation becomes more sustainable is the amount of solid waste generated.

Indicator: Kilograms of waste / day-tourist or tourist

$$\frac{Total\ kilograms\ of\ waste\ /\ quarter}{Number\ of\ tourist\ days\ or\ tourist/quarter}$$

Unit of measure: kg / day tourist or tourist.

It is recognized that the measurement of the total amount of waste generated by tourism activities is difficult to achieve, but a waste audit program can be used to collect and weigh them in a number of different periods to provide estimates reliable amount of waste / day-tourist or tourist.

The volume of waste generated (calculated by the number of containers sent to the storage areas) can be obtained by using standard conversion factors (1000 liters are equal to 650 kg).

It is important to use the same estimation methodology in order to monitor progress in the waste reduction process. A quarterly calculation and annual reporting of this indicator by an ecotourism business manager is recommended. The sources of information needed to calculate the indicator include: registers and statistics on the number of solid waste containers, invoices for their collection services.

Indicator: The percentage of all waste that is reused and / or recycled

$$\frac{Kilograms\ of\ waste\ reused\ or\ recycled}{Total\ amount\ of\ waste} X100$$

It is recommended that the quarterly calculation and annual reporting of this indicator be made by a responsible person within the company, aiming at increasing the share of recycled waste.

Minimizing contamination through waste disposal. In the ecotourist activities, there are two sources of potential chemical contamination: cleaning products and chemicals used in land management. Products that are not biodegradable can damage the quality of water and soil fertility. An ecotourism development encourages the use of biodegradable products and recommends practices to reduce the use of chemicals; the use of environment-friendly products (based on citrus, vinegar, etc.), the use of compost, organic products for land maintenance.

Indicator: Kilograms of chemical products used / day-tourist or tourist

$$\frac{Total\ kilograms\ of\ used\ chemical/quarter}{Number\ of\ tourist\ days\ or\ tourist/quarter}$$

The quarterly calculation and annual reporting of this indicator is recommended. As sources of information needed for calculation, it can be used: invoices, inventory list of chemicals.

Indicator: The percentage of biodegradable products used in total

$$\frac{Total\ Kilograms\ of\ biodegradable\ chemical\ used/quarter}{Total\ Kilograms\ chemical\ used/quarter} X\ 100$$

Energy Conservation. Minimizing energy consumption reduces operating costs and impacts on the environment by conserving natural resources and reducing greenhouse gas emissions and hazardous waste. Energy savings can be achieved by increasing efficiency, selecting efficient energy equipment, using renewable energy sources. In terms of ecotourism, energy is consumed for heating and cooling tourist units, lighting, cooking, cleaning, water pumping, etc.

Energy is supplied by burning fossil fuels (coal, gas, oil), which releases carbon dioxide into the atmosphere, generating climate change that has a negative impact on natural ecosystems. The easy calculation of carbon dioxide emissions from tourist activities and the compensation that can be paid for their production is achieved using standardized methods and measurements.

Indicator: Total energy consumed / day tourist or tourist:

$$\frac{Total\ energy\ consumated\ in\ MJ\ (Mega\ Joules)}{Number\ of\ tourist\ days\ or\ tourist/quarter}$$

The following sources of information can be used in calculation: energy bills, coal / wood weight or volume statistics, gasoline / diesel bills, renewable energy production statistics.

Indicator: The percentage of renewable energy in total energy

$$\frac{Total\ MJ\ (Mega\ Jouli) from\ renewable\ energy\ source/quarter}{Total\ MJ\ (Mega\ Jouli)/quarter} X100$$

Water conservation. The actions of saving water (by diminishing demand and / or intensifying recycling), without compromising safety and health, will contribute to the global sustainable dimension. The environmental costs of water consumption are due both to the use of limited natural resources and to the transport and pumping of water, chemicals for cleaning it and wastewater treatment.

Indicator: Total volume of potable water consumed / tourist days or tourist

$$\frac{Total\ kilos\ of\ drinking\ water\ consumated/quarter}{Number\ of\ tourist\ days\ or\ tourist/quarter}$$

Minimizing socio-cultural damages

Implementing a code of conduct is a necessary starting point in knowing the social aspects and the cultural potential of local communities.

Indicator: The code of conduct is integrated into management tools. It can be evaluated annually based on a scale between 0 to 10 where: 0 assumes the absence of code, 1- verbal management intents about a code of conduct, 5 - the presence of code or educational materials, and 10 - a formal code is integrated into the management tool. Sources of information are documents on company policy, brochures, interviews with staff, etc.

Contribution to local community development. Ecotourism acts as a stimulating factor for progress and community sustainable development by supporting local initiatives and contributing to infrastructure development - schools, hospitals and access roads. The type of contribution may differ depending on the needs and resources available to ecotourism businesses; could be identified, in this context, financial contributions to the various community events, cultural activities and infrastructure development, as well as contributions in the form of guidance / training programs, training in tourism and environmental protection and financial, logistics and marketing support to community projects.

Indicator: Percentage of revenue from annual contributions from total annual income

$$\frac{Income\ from\ annual\ contribution}{Total\ annual\ revenue}$$

As sources of information needed for calculation can be used: invoices paid to support local business initiatives, income from financial documents, etc.

Indicator: New businesses and / or personnel promotion. The purpose of this indicator is to assess how ecotourism businesses and their staff who have benefited from training programs in order to improve their capability and quality could support and actively participate in the sustainable development of communities.

Reporting on this indicator could be done annually by centralizing the number of people promoted and businesses that have been developed through participation in training programs.

Stakeholders Consultation. The multiple connections and implications of ecotourism in the economic, social, cultural and environmental plan of local communities argue the current concerns for respecting local cultural values - through public consultation of the population and relevant stakeholders - in the planning and management activities of tourism enterprises.

Indicator: Dialogue and consultation with the community and other stakeholders is a key, qualitative indicator which demonstrate that dialogue is a two-way process involving formal and informal public meetings between representatives of ecotourism businesses and community organizations.

It can be assessed annually based on a scale between 0 to 10 where 0 assumes no dialogue exists between the community and the company's representatives, 1 - community / stakeholders are verbally informed about the different aspects of tourism activity, 2 - community / stakeholders

are verbally and in writing informed about different aspects of tourism activity, 3 - community / stakeholders are represented in panel without active participation, 4-community / stakeholders can formulate opinions but do not participate decision-making process, 5 community / stakeholders involved functionally because it facilitates the development of tourism activities, 8-community / stakeholders actively participate in panel / committees / councils, 10- community / stakeholders participate in planning and management of tourism activities.

Sources of information are the reports of positive community responses, stakeholder / community consultation statistics, company policy, and local community consultation procedures.

Maximizing the economic benefits of local communities

Employing local community staff. Regarding the benefits of hiring local community staff, some of the most important are mentioned: local personnel has a strong interest in the sustainable development of the local community and represents a valuable link between ecotourism businesses and the stakeholders / local community.

Indicator: The percentage of staff in the local community employed in total staff

$$\frac{Staff\ employed\ in\ the\ local\ communities}{Total\ Staff}$$

The information can be obtained from human resources documents of the ecotourism companies.

Indicator: The percentage of total wages paid to local community staff

$$\frac{Gross\ amount\ paid\ to\ staff\ employed\ in\ the\ local\ community}{Gross\ amount\ paid\ to\ the\ entire\ staff}$$

This indicator measures social equity by analyzing the percentage of total wages paid to local community staff by providing information on the current financial status of the resident population, thus demonstrating the existence of economic benefits or leaks.

The quarterly calculation and annual reporting of this indicator is recommended by a company manager. Financial documents are used as sources of information.

Acquisitions of local goods and services. Parallel to the hiring of local community staff, it is important the acquisitions of local products and its increasing role by multiplying inputs into the local economy, focusing on the component of financial resources from ecotourism activities.

Indicator: The percentage of purchases of local goods and services out of total purchases

$$\frac{Amount\ spent\ for\ the\ purchase\ of\ goods\ and\ services\ in\ local\ communities}{Total\ amout\ spent\ for\ the\ purchase\ of\ goods\ and\ services} X100$$

Sources of information: the company's bills and financial documents.

Operational and quality management

Integration of ecotourism principles into management operations. The existence of a company ecotourism policy demonstrates its commitment to: minimizing environmental and socio-cultural damage and maximizing the economic benefits of local communities; compliance with regulations on staff hiring, environmental protection, health, hygiene and public safety; aspects of management and monitoring systems.

Indicator: the Company's ecotourism policy. It is evaluated annually based on a scale between 0 to 10 where 0 assumes the lack of ecotourism policy, 1-verbal commitment to respect ecotourism principles, 3 - the existence of a written document on the principles of ecotourism without the formulation a formal policy, 5 - written formal but non-disseminated policy, 7 - communication of the policy through written materials to the staff, 9 - the dissemination of ecotourism policy to the external stakeholders and the community, 10 - a public statement for the promotion of the ecotourism policy of the stakeholders, containing the commitment to minimize environmental and socio-cultural damage, and maximizing the economic benefits of local communities complying with regulations on staff hiring, environmental protection, health, hygiene and public safety; aspects of management and monitoring systems.

Information sources needed to evaluate this indicator include: company policy, verification of how the policy was publicly communicated to relevant stakeholders, interviews with staff and suppliers.

Indicator: Management systems for adherence to ecotourism principles evaluates annually, how management systems meet the objectives specified in the company's ecotourism policy. A scale between 0 to 10 is used, where 0 assumes no systems exist, 1-verbal commitment to managing general ecotourism issues, 5 - management plans addressing water, energy, waste, and socio-cultural aspects / of the local community, 10 - functional management systems. The

information comes from: planning documents, interviews with department managers, documents describing management systems and how to operate them, company performance statistics.

Indicator: Personnel implementing good practice in ecotourism involves training of staff to implement good practices in ecotourism. It is evaluated annually based on a scale between 0 to 10 where 0 - assumes the lack of good practice implementation policy, 2 - verbal commitment of implementing good practices by management, 3 - verbal engagement of staff, 5 - providing a handbook on the basic principles of good practice implementation, 7 – staff training based on handbook, 10 - annually training and evaluation.

The sources of information are: training statistics, annual human resources department reviews, staff interviews.

Maximizing eco-tourist satisfaction. The level of satisfaction is achieved through a direct survey based on a questionnaire.

Indicator: Eco-tourist satisfaction can be obtained by asking visitors about two categories of problems: one imposed and one optional. The first category measures the quality of the tourist experience and reflects the changes in the destinations, as well as the tourists' expectations. The measurement is made using questions such as: "During your current visit to ... (local community) how do you characterize your tourist experience?" Along with this, the questionnaire can also include an additional question, and in this sense it can be opted for one such as: "Will you recommend this destination to your friends?". The source of information for this the indicator is represented by the results of the questionnaire.

Certainly, the development of eco-sustainable goods and services through ecotourism is a sustainable alternative to the exploitation of natural and anthropic resources, yet ecotourism can degrade natural and cultural heritage if the management of protected areas is poorly achieved. This makes ecotourism, beyond creating opportunities for local communities, also a challenge. Establishing the set of indicators is therefore necessary for an integrated ecotourism management to prevent the degradation of natural habitats and the cultural and traditional values of local communities, as their revitalization proves to be extremely difficult once the critical degradation thresholds have been reached.

3.4. Elaborating a local communities evaluation model regarding the development of goods and services eco-sustainable of the selected community

Elaborating an evaluation model that aims to develop eco-sustainable goods and services through ecotourism involves investigations on local communities, reflecting international experience in the process of designing it.

The analysis of current data on natural resources, community decision-making elements and existing infrastructure overlap and complement the concrete information on the type of tourists and their needs, that materializes in model elaboration and will assist local communities in finalizing their own development strategies of goods and services eco-sustainable through ecotourism as part of a sustainable market plan.

The model will be one of the feasible tools for small local communities that aim to develop eco-sustainable goods and services through ecotourism, which is applicable a priori the initiation and development of a project by a community in partnership with other stakeholders interested in the profile and premises of ecotourism development of it. It is therefore necessary to thoroughly collect and analyze the data in relation to the local market and community, a process that will determine the viability of business solutions for both community members and partners.

The design of the model focuses primarily on the opinion of residents and provides information formulated in an intelligible way and, above all, for their benefit. The results obtained on the basis of semi-structured interviews and expert interviews are the support for the SWOT analysis (strengths, weaknesses, opportunities and threats), on the basis of which is evaluated the local communities' ability to respond to the feasibility of developing goods and eco-sustainable services through ecotourism.

The efficient allocation of financial resources by local communities and partners involved, corroborated with the identified needs of the community and tourist demand, will be based on the model implementation's results.

The evaluation model for local communities within protected areas from the perspective of eco-sustainable goods and services development through ecotourism is designed as a set of objectives, implementation phases and operations undertaken in the argumentative approach of opportunity.

The first step is to establish the model's reasoning, which identifies the impediments encountered in the decision-making process regarding the selection of the optimal trajectory of action, which analyzes the context of the natural environment and the problems faced by the local community circumscribed by the dependent cultural factors.

The model has as a fundamental objective the characterization of the information targeted in the investigation process in order to prove the opportunity for the development of eco-sustainable goods and services within the protected area. By facilitating the establishment of the competitive advantage elements, the expressed needs, the model is essentially a guide that establishes the importance level of the areas identified in the economic development process and which aligns the orientations highlighted with the regional, national and international tourism market trends.

The finality of the approach transposed into operational practice is outlined by the specific objectives of the evaluation model, which harmonizes the interaction of the economic, political, socio-cultural and environmental factors dominated by the conceptual particularities of sustainability. The determination of the objectives implies the participatory contribution of the residents, of the local and governmental authorities and highlights, in stages, the trajectory of the implementation of the evaluation approach:

1. Resources review and analysis - plurivalent actions designed on:

- the particularities of the natural, economic and socio-cultural environment of the local communities from protected areas;

- natural and anthropic heritage related to ecotourism activities, involving the analysis of resources from the perspective of accessibility and relative to the degree of attractiveness and support capacity;

- the size of the current tourist development, including the receiving units and the auxiliary elements of the technical-material base, determined by the qualitative status of the available equipment and ecotourism services rendered; the numerical variables of the model refer to units, accommodation and food;

- infrastructure components as a whole: access network, electricity, telecommunications, water supply, waste management, with variables such as water consumption / year / inhabitant, km (motorway, national road) etc. ;

- the current / potential tourist market and the types of ecotourist activities carried out, in terms of number of ecotourists' arrivals - highlighting the characteristics and attitude towards the ecotourism products and services offered - and the volume of revenues related to the type of ecotourism activities;

- measures and plans for developing ecotourism at local, regional, national level;

- the legislative framework, which regulates ecotourism infrastructure quality standards, territorial planning supervision and biodiversity conservation, as well as operational incentives for capital flows (investments, community funds, etc.) for the development of ecotourism.

The classification of natural resources will be carried out in a rigorous process of review, registration and evaluation, by specific categories: environment, cultural and historical heritage - primary resources - and local community features - secondary resources. The attractiveness of a destination is determined, first of all, by the existence of primary resources, but competitiveness depends on completing the natural and cultural picture with complementary activities related to local culture and the natural and anthropic environment.

Other factors that affect the development of eco-sustainable goods and services through ecotourism, such as the consistency of the political factor, public health and safety, and the consequences of the competitive market are subject to evaluation in order to establish the attitude of the local community towards protection and conservation, managerial skills, the organizational capacity at the local level, the degree of infrastructure development and, of course, the hospitality attitude. Alongside the opportunities and threats identified, all this qualitative information is the basis of the SWOT analysis that highlights the appropriately of the development of eco-sustainable goods and services through ecotourism within communities in protected areas.

2. Identifying the position of the local community - the attitude and intent - towards four major steps in the development of eco-sustainable goods and services through ecotourism: minimizing environmental damage, minimizing socio-cultural damage, maximizing the economic benefits of local communities and operational and quality management.

3. Investigating the consequences of ecotourism development on biodiversity, the economic and socio-cultural environment of local communities in protected areas - the impact of poor planning and management of ecotourism activities, involving:

- pollution of the natural environment caused by the lack of implementation of a waste management program;

- the degradation of cultural heritage by attributing a purely commercial character to the promotion of traditions and customs;

- the degradation of the architectural heritage, by not respecting the architectural characteristics specific to the local community;

- increased pressure on resources through inefficient ecotourism activities that replace unsustainable traditional ones.

All of these listed above certainly attract significant economic losses that could be minimized through proper planning and efficient management that would ensure the development of eco-sustainable goods and services through ecotourism with long-term benefits for local communities in the areas protected.

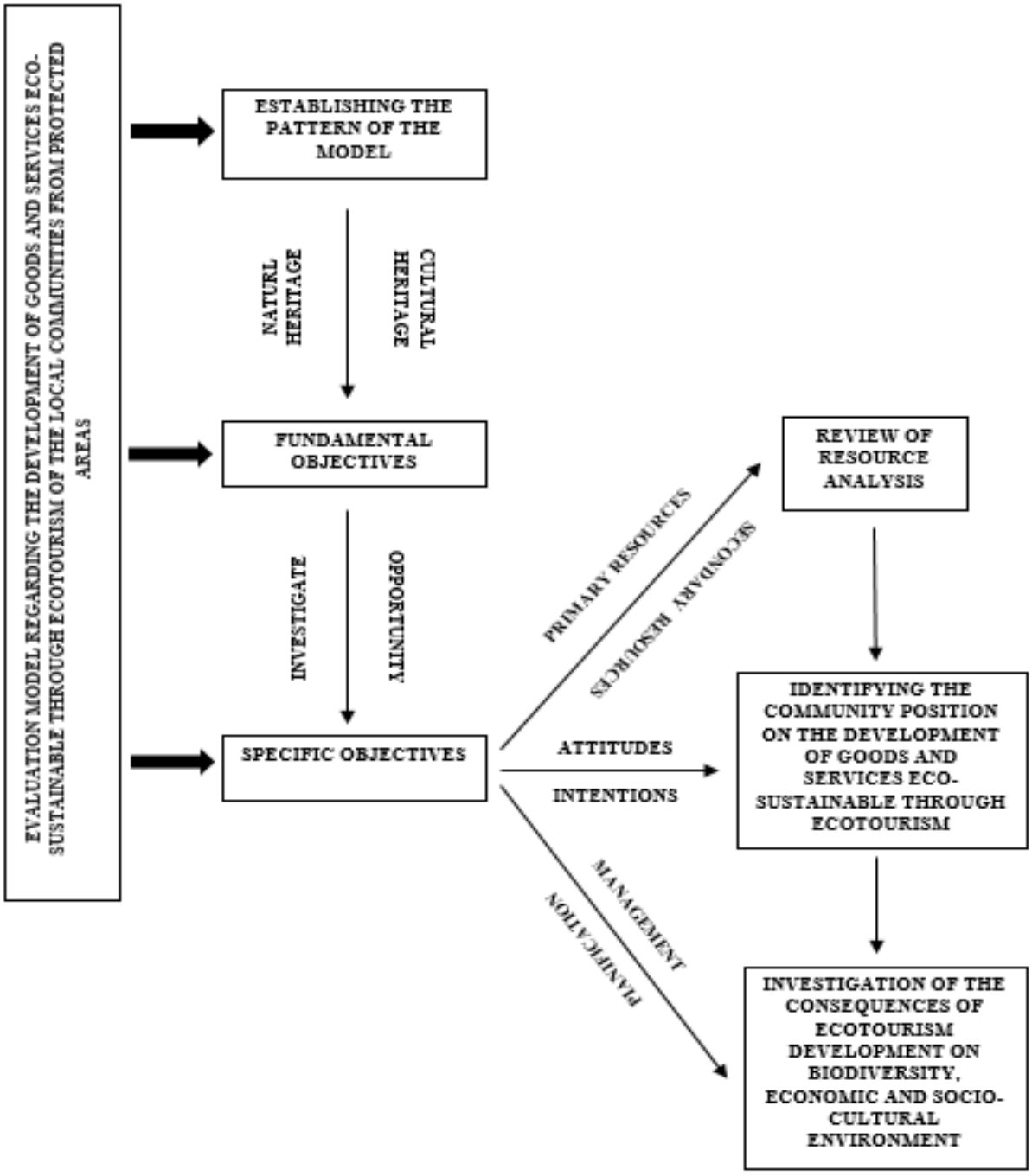
Thus, it is necessary to use, among other characteristic economic instruments, the cost-benefit analysis, which offers local communities the ability to identify economic information in relation to tourism activity and to translate them into the argumentative discourse on opportunity for the development of eco-sustainable goods and services through ecotourism.

The analysis of information highlights the socio-economic contribution of ecotourism, through employment and income generation for residents and, at the same time, outlines the benefits distribution' perspective at community level, the impacts on the economy, on cultural and natural heritage, and the social implications determined by ecotourism development. The holistic analysis communicates the trajectory of the actions according to the exigencies expressed by the local communities in the development of eco-sustainable goods and services through ecotourism, with emphasis on the critical evaluation of tourism resources, which validates the ecotourism profile of the destination.

The whole process of assessing local communities from the perspective of eco-sustainable goods and services development through ecotourism is integrated into the feasibility analysis a-priori the resolution of approving the implementation of the development project, giving the local community and involved stakeholders a time-space vision favorable to the adjacent investments of the needs identified in the tandem local community - tourist demand.

In accordance with the methods and practices in the field, the results of the international experience it has been conducted a complex field research aiming at identifying the main ecotourism assessment indicators of the local communities and on this basis designing a model, the steps to follow in substantiating the decision to develop eco-sustainable goods and services through ecotourism in a protected area. The model considers as reference elements the tourism and economic-social resources of the protected area, the structure of leadership, the potential markets and the typology of tourists, etc. as objective variables as well as the receptiveness to the development of eco-sustainable goods and services by the host populations. In this context, the model requires a careful and consistent collection of community-related information and the macro-environment in which it operates.

Figure no. 3.1. Evaluation model regarding the development of goods and services eco-sustainable through ecotourism of the local communities from protected areas



Source: elaborated by author

The model will be a feasible tool for small communities in protected areas interested in developing eco-sustainable goods and services through ecotourism. It has the role of substantiating decisions, which is why it must be done before the initiation of any eco-tourism development project. It also aims to help communities develop their own strategies for an appropriate ecotourism development.

CHAPTER 4. THE ASSESSMENT OF ECOTOURISM VULNERABILITY TO CLIMATE CHANGE IN NATIONAL PARK OF SIBILLINI MOUNTAINS, ITALY

Globally, it is important to assess how climate change will affect ecotourism system in protected areas and how it will relate and intensify the impacts of other pressures, like natural disasters, pollution, natural resource extinction and economic crises and recessions. There are more than 160 000 protected areas all over the world, which represent salient ecotourism venues. Since ecotourism depends mainly of weather and climate conditions and natural environment of the protected areas - such as landscapes, wild flora and fauna, water resources etc. – climate change represent an important issue (Scott et. al, 2007). Climate changes might have negative impacts on the general satisfaction and the travel experience of tourists, lengths of tourism seasons, natural and anthropic tourism attractions, general and specific tourism infrastructure and sustainability of tourism businesses (Denstadli, Jacobsen & Lohmann, 2011). Despite the globally destructing effects of climate change impacts on tourism destinations, limited research was conducted on this issue. Moreover, research addressing the climate change impact on sensitive destinations such us protected areas in Europe, and especially in Italy, is almost inexistent. To fill this gap, the present research evaluated the vulnerability of ecotourism under climate change impact in the National Park of Sibillini Mountains (NPSM). In particular, the research responds on the following questions: Which are the climate change impacts in NPSM?; In what manner these impacts affect the environmental and socio-economic aspects of the ecotourism in NPSM?; Which are the climate change adaptation measures in NPSM?; Does sustainable management of protected area diminishes the vulnerability of ecotourism under climate change?

4.1. Context of the research

Climate change and protected areas

Climate change represents a major risk for protected areas worldwide. Explicit scientific literature argues that the presence of CO2 in the atmosphere is bigger now than at any time in the past hundreds of years and that world temperatures have raised by 1ºC since nineteen century. The tourism industry is accountable for circa 5 per cent of global CO2 emissions (Fischedick et al., 2014), and the industry's emissions are estimated to raise fast in accordance with the rapid development of world travel.

World temperatures have raised by 1ºC since pre-industrial times (NASA, 2016), and since the mid nineteen century part of the changes – reduced ice and snow, warm and acidify oceans, increased rate of sea level - are recorded over decades to 21st century (IPCC, 2014). According to

IPPC (2014), the last three decades were the warmest in the northern hemisphere for more than one thousand and four hundred years, while the oceans acidity raised with more than twenty six percent since pre-industrial times. Moreover, it has been estimated that world temperatures will increase through the present century under each calculated emission scenarios. Extreme weather events - droughts, severe storms, hurricanes, floods etc. - are expected to arise more often and intense in various areas; the oceans will become warmer and acidifier; and the rate of sea level will increase (IPCC, 2014). These changes impact protected areas, both cultural and natural, in diverse manners.

Even if a part of species from protected areas has the possibility to transfer their ranges in reaction to climate change, the adaptive capacity is diminished by the additional pressures, such as habitat destruction and fragmentation. The rapidity of climate change linked with scarcity of habitat will harshly bound ecosystems reaction in several cases, and will call for the implementation of original and inventive management practices (Stein et al., 2014).

Conserving sizeable integral ecosystems represents the most operative method of preserving the adaptive capacity of natural protected areas. For current areas this represents an improved method on increasing and handling buffer zones and on assuring connectivity with other protected areas (Kormos et al., 2015). The necessity to alter borders may be a significant topic for protected areas in a changing climate, and most of the time a bigger area might be desirable to safeguard the universal value of the environment.

Taking into consideration the climate impacts on protected areas around the world, and the necessity to diminish the risk to their value and related local communities economies, two contemporary international accords on climate change and sustainable development offer reason for careful hopefulness - the Paris Agreement on Climate Change and The 2030 Agenda for Sustainable Development (UN, 2015). These agreements offer guidelines to governments in fighting climate change impacts and drive them to develop sustainable framework of protected areas as ecotourism destinations for future generations.

The Paris Agreement signifies universal consent on preventing global warming by limit the temperature increase to 1.5ºC, below 2ºC above pre-industrial levels, an aim that 197 nations will support through greenhouse gas emission reductions. Countries decided to reach zero greenhouse gas emission in the last decades of the century by matching CO2 emissions with eliminations through carbon sinks such as forests.

Some features of the Paris Agreement are important for the administration and conservation of protected areas. As one feature, the proposal on stopping deforestation will rise the significance of forest preservations actions in protected areas, their buffer zones and

surrounding local communities. Some countries assured during the Paris agreement meetings that will consider their protected areas as instruments for climate mitigation and adaptation. Strategic actions are CO2 sequestration and conserving ecosystem services to diminish the threat, therefore underlining the constructive role that protected areas could perform in climate strategies. Osipova et. al. (2014) argued that around six billion forest biomass carbon tones are retained within protected areas of the earth tropical regions. By diminishing fossil fuel will lead to the additional advantage of decreasing the number of protected areas exposed to oil and gas exploitation. The second feature of the Paris Agreement underlined the necessity to apply a universal method to handle climate impacts by changing from focusing on diminishing disaster losses to risk evaluation, adaptation planning and resilience building.

Other important feature of the agreement recognized the potential for protected areas to turn into the main instruments for nations in constructing resilient futures, therefore assists developing states to access ways of funding. Responsibility is part of it, every five years countries will meet to evaluate the joint support and calculate progress towards the cooperative aim.

The aspiring 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs) also provide a significant opportunity for protected areas by reporting cultural patrimony in connection with sustainable development (UN, 2015). One of the goals of the SDGs highlights the actions to maintain the world wide's cultural and natural heritage of protected areas. Other objectives call for imperative efforts to fight climate change impacts by protecting coastal and marine areas; sustainable usage and preservation of the oceans, including diminishing and tackling the impacts of ocean acidification; and rising the economic advantages of local communities from small island states through the viable usage of marine resources, including through ecotourism; rebuilding and sustainable usage of terrestrial biodiversity. More, other goal of this agenda demands the elaboration and application of sustainable tourism measures that provide jobs and local culture.

The Paris Agreement and the 2030 Agenda can offer a framework for nations to shape resilient societies, safeguard the earth from degradation, increase living conditions across the world and conserve the natural and cultural resources of protected areas under the climate change impact.

Climate change and ecotourism

Ecotourism could be a strategy of sustainable development and the conservation of natural and cultural heritage of the protected areas under climate change impact, but if inadequately managed it could be disruptive and have negative environmentally impacts to fragile ecosystems,

landscapes, monuments and negative socially and economically impacts on local communities (WHC, 2012).

International tourism is greatly dependent on energy-intensive transport means, predominantly airplanes and cars, and the industry's impact to world carbon emissions, five per cent in 2005, is forecasted to more than ten percent by 2035. Transportation cause circa seventy five per cent of emissions in the tourism industry and is estimated to triple its emissions from the 2005 baseline by 2035 (Fischedick et al., 2014). The tourism sector is expected to react at the growing pressure to decrease CO2 emissions (Nichols, 2014), as his exponential development, particularly in long-haul travel, and the industry's dependence on fossil fuels are discordant with the necessity to decarbonize the world economy requested in the 2015 Paris Agreement (Scott et al., 2016). In this respect, the International Civil Aviation Organization released a recommendation for a CO2 emissions standard for airplanes that could be reinforced over time (ICAO, 2016).

Tourism, and especially ecotourism are extremely vulnerable to *direct physical climate change impacts* like the rising sea levels and temperatures, but also to *indirect impacts*, such as destruction of cultural and natural heritage, changing travel seasons at the level of protected areas, extreme weather events, rising insurance costs for local communities, water deficiencies and increasing tourist exposure to some diseases. Ecotourism can be also exposed to some *positive impacts* of climate change, such as the attractiveness to ecotourists of new geographical protected areas as temperatures increase and the opportunities for "last chance tourism" in order to see natural and cultural heritage of protected areas that are under risk of the effects of climate change – e.g. glaciers, Artic area, small islands etc. Climate impacts on protected areas will affect an extensive range of ecotourism activities including dive, safari, bird watching, hiking, trekking, climbing and canoeing (UNWTO, 2008).

As an impact of climate change, *sea level rise* will have intense and various effects on ecotourism in coastal protected areas through the erosion and submersion of specific ecotourism facilities and natural attractions like beaches, cliffs and sand dunes. These effects diminish the attractiveness of costal protected areas and lead to decrease the income of ecotourism businesses of local communities and redirect the ecotourism flows in other new geographical protected areas.

Other impacts of climate change, such as *rising sea temperatures* and *ocean acidification* have negative effects on marine protected areas biodiversity. Coral reefs and their marine life - which represent the most salient ecotourism attractions and contribute to local economies of 100 countries with more that twelve billions of dollars annually - are highly exposed to those impacts. (Burke et al., 2011; Gattuso et al., 2014; Hoegh-Guldberg et al., 2007). More than fifty percent of the worldwide coral reefs are under the threat of degradation caused by ocean acidification which

have a negative impact on the availability of calcium carbonate necessary for the reef-building (Gattuso et al., 2014) and the percent will expected to rise till seventy by 2030 (Frieler et al., 2012) placing the coral reefs from marine protected area at significant risk. *Rising sea temperatures* – other impact of climate change - force the algae of the coral tissue to be expelled, causing the "coral bleaching" effect. Therefore, most important ecotourism activities, such us diving and snorkeling can suffer important losses in terms of revenue for local communities, based on the unsatisfactory ecotourist experience as a consequence of these coral bleaches.

Increasing temperatures might affect ecotourism in protected areas in a multiple ways:

• Less snowfall, the ongoing retreat of glaciers and warmer winters have diminish the number of tourists in the mountain protected areas in Europe and North America. Higher temperatures would decrease the number of eco-resorts that are snow dependent, as well as shortening the periods of ecotourism activities – cross country skiing, winter sea kayaking, hiking and ice climbing, snowshoeing, snow kiting, ski joering, telemark, dog sledding - connected with the cold season.

• Changes in biodiversity in the sense that species transfer towards improved conditions to which they are better adapted - the poles and to superior altitudes where possible. Therefore, some ecotourism activities could be affected, such as safari in natural protected areas, particularly isolated geographically. On the African continent, more that forty percent of species in protected areas are expected to be under the risk of vanishing by 2080, supposing that they have any possibility to migrate.

• Rising temperatures might provoke forest fires in protected areas worldwide. In the South of Europe, fire periods may extend, and there could be an intensification in the number of severe fires. But, due to the higher humidity, in north of Europe, is forecasted to lead in decreasing frequency in forest fires. In Northern America, pristine forests from natural protected areas died because of the droughts and fires. In this respect, ecotourism activities such trekking, hiking, observing the nature etc. are affected and economic advantages of businesses from protected areas are reduced.

• Higher temperatures could diminish in the reallocation of prosperity from rich to poor nations that tourism presently provides. The ecotourism flows from cold, developed countries to warm, developing ones might reduce, as more ecotourists prefer visit protected areas nearer to home.

• Exists a risk that climate change impacts could make some ecotourism facilities impracticable, rendering them obsolete assets and causing financial losses to business owners.

An indirect, operational impact of climate change on ecotourism is represented by the *changing water availability* that will drive to disputes with businesses and local communities from protected areas. Climate change is forecasted to diminish precipitation in several dry protected areas worldwide. The fact that freshwater provisions are limited in some of the protected areas could negative impacts on ecotourism businesses. Climate change could cause water shortages by fastest melting glaciers; shifting precipitation patterns; and rising sea-level with impact on the salinization of surface water provisions. Rising demand for water by other industries (construction, food and beverage, agriculture) from local communities in protected areas could increase the stresses on water availability, and make ecotourism operators competing with other stakeholders.

Ecotourism businesses in protected areas could be exposed to the indirect, operational impact of climate change, such us *extreme weather events*. Powerful storms accompanying by heavy winds and rains, floods, landslides and droughts can negative impact on the ecotourism general and specific infrastructure (accommodation facilities, transport, power and water stations etc.). Therefore, the increasing in intensity and length of extreme weather events could generate the rise in insurance costs, as insurance companies need to provide greater numbers of coverage for those risks. This might lead to severe pressures on ecotourism stakeholders. Local communities from protected areas in developing nations are likely to be less able to mitigate and adapt, than developing nations, to this indirect impact of climate change, such us more extreme weather events. Therefore, this impact can affect ecotourists' perception of the attractiveness of a specific protected areas, as studies of extreme weather events have reported.

Ecotourism business from protected areas are also vulnerable to the *impacts of climate change on health, food and water security*. In a various protected areas worldwide, food and water supplies are affected by these impacts, and this tendency is expected to grow. Climate change impacts have the power to annihilate the resilience of local communities of protected areas from developing countries. Therefore, ecotourism businesses managed by these local communities will be vulnerable to decrease security and social discontent generated by climate impacts on health, food and water public security.

Climate change could have also *positive impacts* on ecotourism in protected areas worldwide by generating attractiveness to tourists regarding protected areas in new geographical regions, such North of Europe and Alaska, as the temperature rise. Some authors suggested that tourists are travelling to experience ecotourism products in protected areas that are at risk in a global warming – such as glaciers or Antarctica. Surely, the decrease in sea ice is projected to enhance to an already fast development of Arctic cruises. Nevertheless, the advantages generated by such 'last-chance' tourism will be on short-term.

In spite of the increasing scientific research proving the threats of climate change on ecotourism, anxiety stays low among ecotourism stakeholders, with part of them mistakenly considering that exists too much vagueness regarding climate impacts in order to justify mitigation and that adaptation will be reasonably easy (Nichols, 2014). In reality, adaptation measures at various protected areas destinations are somewhat limited and there is an imperative requirement for the ecotourism stakeholders to report this aspect more seriously. Specialists argued that the strategy changes and investments necessary for real adaptation can need decades to implement and called on the tourism stakeholders to immediately begin elaborating and applying response measures, especially for destinations most likely to be affected by climate change by mid-century (UNWTO, 2008). Scott et al. (2016) argued that the tourism stakeholder's response on climate change has never been stronger and tourism industry will need to dedicate improved actions to understand the implications of climate change.

Vulnerability assessment framework

Ecotourism businesses from protected areas are vulnerable at climate change impacts because they rely on salient resources such as natural and anthropic attractions and tourism specific infrastructures that are sensitive to climate change (Becken & Job, 2014; Nyaupane&Chhetri, 2009; Steyn & Spencer, 2012). Decreasing negative impacts represents a compulsory condition not only to minimize vulnerability, but also to guarantee long-term sustainability of ecotourism businesses.

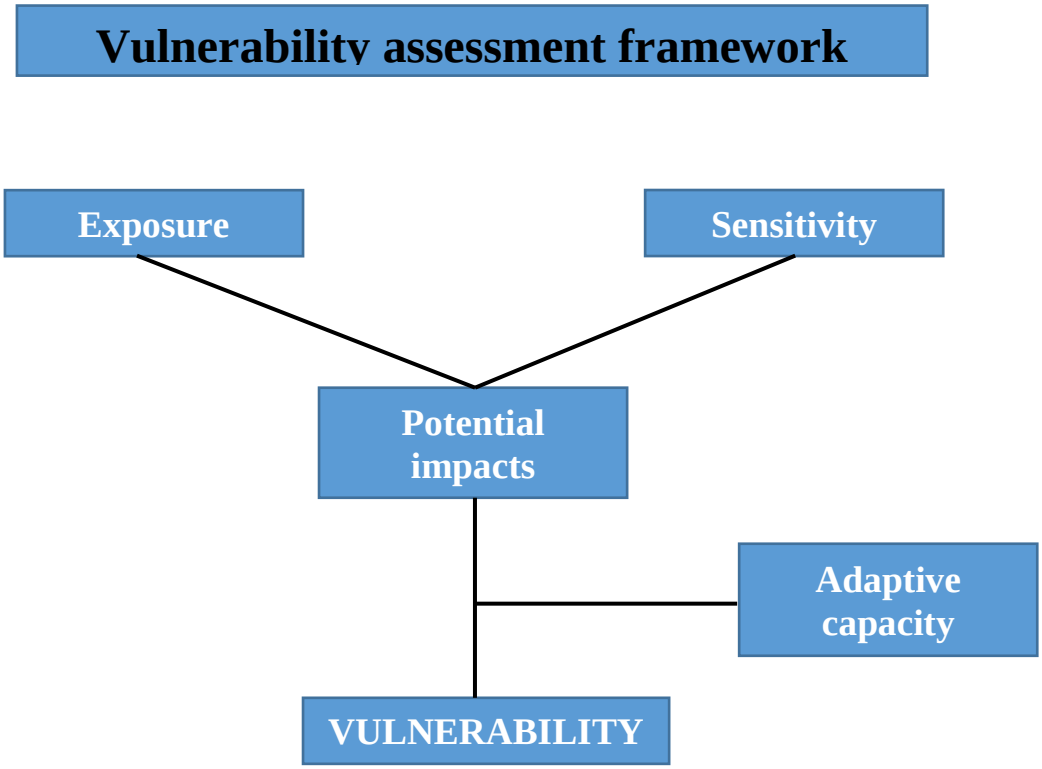
Vulnerability is a concept regularly used in climate change studies (Adger, 2006) and indicates a condition whereby a system is susceptible to or incapable to manage the negative impacts of climate change (IPCC, 2007). Vulnerability is a function of the nature, significance, and degree of climate variation to which a system is exposed, its sensitivity and its adaptive capacity (IPCC, 2001). Hinkel (2011) argued that vulnerability can be minimized through adaptation, but this should be preceded by vulnerability assessments in order to gather data on negative impacts and the degree and nature of vulnerability (IPCC, 2014). Generally, vulnerability assessment can be made at different levels (communities, regions, countries) with the aim of generating bases for elaborating adaptation actions.

At the local community level from protected areas, vulnerability is generated or intensified by various factors which are not essentially circumscribed to climate change (Birkmann, 2007), like socio-economic, environmental, physical and institutional factors - e.g. economic markets, social organizations and systems, topography, land cover and environmental conditions (Ritchie, 2009). Therefore, ecotourism business from protected areas differ in their magnitude of

vulnerability to climate change, based on their exposure, sensitivity and capacity to adapt. Chaudhary & Bawa (2011) reported that in the vulnerability assessment it is essential to incorporate the evaluation of ecotourism stakeholders' perceptions on climate change impacts, because these can improve or restrain the entire process of adaptation (Klint et al., 2012). Other authors, reported that if ecotourism stakeholders fail to make a causal link between climate change impacts and local consequences, then they might not recognize climate change as a threat and subsequently neglect to evaluate and develop adaptation responses (Davidson, Williamson & Parkins, 2003).

This research undertakes an integrated approach to assess vulnerability of the ecotourism business from NPSM to climate change and draws more explicitly upon a framework recommended by IPCC (2001), focusing on three dimensions: exposure, sensitivity and adaptation (see figure no. 4.1).

Figure no. 4.1. Vulnerability assessment framework



Source: Johnson & Welch, 2009

The aim of a vulnerability assessment is to highlight the present vulnerability conditions based on past and actual exposure, and the sensitivity and adaptive capacity of the system of interest. The vulnerability assessment initiate with the analysis of the system profile based on data about the state of natural and cultural patrimony, socio-economic development and environmental

issues. After that, the vulnerability assessment continues the analysis with past and current observed climatic and non-climatic stressors and shocks (exposure) that have caused the vulnerability of the system (sensitivity). Furthermore, vulnerability assessment offers the possibility to understand the adaptive actions in the past (adaptive capacity) and consequently support the elaboration of future adaptation measures to climate change impacts.

Exposure

Exposure indicates the type and degree to which a system is influenced by the major climate changes impacts (IPCC, 2001). At the local community level from NPSM, exposure is produced or provoked by various risk factors – disasters related to natural hazards; perceptions of stakeholders implicated in elaborating and implementing adaptation actions for climate change impacts; and markets or policy failures – that are not in connection with climate change (Klint et al., 2012). In the scientific literature, risk factors connected to physical disasters are stated to as shocks and stressors (Klint et al., 2012). Shocks in NSPM are represented by events – earthquakes, avalanches, storms, landslides etc. – that strike unexpectedly and persist for a short time and interrupt ecotourism businesses particularly when their manifestation overlaps with peak seasons of ecotourists. In opposition, those events – land degradation, biodiversity loss and water shortages – happening at a slow pace with their impacts being perceived in a long time are described as stressors. Both shocks and stressors can disrupt and decrease the sustainability of ecotourism businesses (Calgaro et al., 2014).

Romieu et al. (2010) argued that assessing vulnerability to climate change request as first step the identification of shocks and stressor factors. Analyzing these offers to ecotourism stakeholders the bases for evaluating vulnerability as well as elaborating suitable adaptation strategies for ecotourism (Hinkel, 2011).

Sensitivity

Sensitivity refers to the degree to which a system is altered, both unfavorably or favorably, by climate-related stimuli. Therefore, sensitivity not only indicates the negative impact of climate change but also can integrate opportunities (IPCC, 2007). For example, increasing temperatures in Artic destinations might cause the fast melting of glaciers, but it also might conduct to the enlargement of cruise tourism shoulder seasons or the growth of the niche type of tourism such as ‘last chance’ (Lemelin et. al, 2010).

The system can be affected by several climatic stimuli; nevertheless, the impact of these stimuli on the system could be affected by other socio-economic and biophysical factors. The

sensitivity of a system defines the dose-effect rapport between its exposure to climatic stimuli and the subsequent impacts (Füssel & Klein, 2006). Sensitivity is assessed by establishing whether the system is considerably exposed to climate stimuli or not. If the system is exposed to climate stimuli, especially to actual climate variability and extreme events, it must be reported as sensitive.

Adaptation

Adaptation to climate change can be defined as the "adjustments in human and natural systems in response to actual or expected climate stimuli or their impacts that moderate harm or exploit beneficial opportunities" (IPCC, 2007, pp.870). Adaptation actions to climate change can be physical (e.g. environmental reinstatement), structural (e.g. sea barriers), institutional (e.g. elaborating standards) or social (e.g. community diversification) (Field et al., 2014). Adaptation measures can be responsive or preventive, with latter measures assumed before impacts are noticed (Smit et al., 2000). In various scenarios, preventive adaptation measures leads to lower and efficient long-term costs associated with climate change impacts (Stern, 2007). When elaborate adaptation actions for a specific system, it is also essential to evaluate and improve its adaptive capacity (Adger et al., 2007).

The term 'adaptive capacity' mainly defines the system's capability to adjust its attributes or behavior so as to cope with the consequences of climate change (Füssel & Klein, 2006). This phase evaluates the ability of the system to react and adapt to variability in climatic conditions. This is accomplished through evaluating: how the system has adapted to actual climate change; the system's essential abilities that may permit future adaptation. Adaptive capacity to climate change exists across various sectors and communities and is essentially reliant on sufficient access to relevant social, human, institutional, natural and economic resources. Nevertheless, the system that claims the resources for adaptation requires also the ability to mobilize them efficiently (Wall & Mathieson, 2006).

4.2. Research methodology

This research utilized the Vulnerability Assessment Framework to examine the exposure, sensitivity and adaptability of a particular local system, the National Park of Sibillini Mountains and its ecotourism strategy in order to maintain the eco-sustainable goods and services on the market under climate change impacts. This research undertook a qualitative approach, which engaged the case study as research strategy (Creswell, 2009). The case-study employed the evaluation of the climate change vulnerability of the ecotourism in a particular protected area and

its local communities (Stake, 1995). Additionally, community based ecotourism studies to comprehend climate change vulnerability frequently undertake case-studies (Ford et al., 2010, Jamaliah & Powel, 2017). Furthermore, vulnerability assessment case-studies are established on the complete analysis of a particular local system, however the reliability and accuracy of single studies have been criticized for their limited applicability for larger generalization, thus restraining possibilities to develop adaptation at national level (Flyvbjerg, 2006; Ribot, 2011). However, the case studies can be fundamental for connecting vulnerability assessments to the scale of protected areas management, involving data users, understanding adaptive capacity and taking into consideration climatic and biophysical conditions of local communities (Pearce et al., 2009). Additional to the advantages and disadvantages of assuming a case-study, other strength is that it can permit generalizations to other similar systems (Evans & Gruba, 2002).

Sampling and data collection

This research collected qualitative information through semi-structured interviews which were carried out with stakeholders involved in ecotourism activities in July and August 2018, based on the related communities vulnerability researches (Jamaliah & Powel, 2017; Smith et al., 2008).

As local ecotourism stakeholders represent a major source of adaptive capacity, they can be helpful in understanding the impact of climate change, recognizing and classifying vulnerabilities in a protected area (Simpson et al., 2008). To overcome some of the issues connected with integrating stakeholders' contribution into a vulnerability assessment framework, the most influential (managers of the NPSM) and the most vulnerable key informants (managers/owners of ecotourism businesses) were identified, based on the responsibility of the individual, geographic location and sector (Few et al., 2007; Simpson et al. 2008). As Babbie (2008) suggested, other informants were selected trough snowball sampling based on recommendations of the initial participants. In this research, 22 semi-structured interviews (see annex 6) were conducted with stakeholders, such us: the director, executive manager and environmental responsible of the NPSM, who have significant knowledge and expertise; 7 ecotourism guides; 7 managers/owners of the ecotourism businesses facilities – accommodations and restaurants – nearby to the important attractions of the protected area; 2 managers of tourism information points; 3 owners of the local products shops. The latter informants doesn't have an ecotourism expertise, but were capable to report other cross-cutting domains and knowledge appropriate to the sector.

The interview guide (see table no. 4.1.) included specific questions intended to obtain the salient topics related to vulnerability, to identify the climate change associated threats, the related economic, social and environmental impacts and adaptation strategies used by ecotourism stakeholders from local communities of NPSM in order to maintain/develop the eco-sustainable goods and services under the climate change impact.

Table no. 4.1. Interview Guide Questions

1. What are the current threats related to climate change?
2. How do threats affect the social, environmental and economic aspects of the ecotourism system?
3. Do you think our climate is changing in Sibillini? If so, how is it changing and what do you think is causing it?
4. These changes will cause problems in terms of:
    a) Tourism? Business? In increasing or decreasing demand? Why?
    b) The environment in Sibillini?
    c) What are the likely social impacts of these climate changes?
5. The Sibillini has varied ecosystems. Which one is influenced by climate and non-climate stressors and why?
6. Are there human activities and practices that exacerbate the effect of climate change in the Sibillini? What are they?
7. Is there uncertainty associated with future climate change and expected impacts?
8. What are the current policies and measures for adapting to climate change?
9. Is eco-sustainable management reducing the vulnerability of the ecotourism system to climate change?
10. Faced with the impacts of climate change, what are the current actions taken to improve tourism businesses?
11. Do you use some kind of technical practice to deal with the impacts of climate change?
12. Are there any education and awareness programs to raise awareness of the population, tourists and staff regarding climate change, their impacts and adaptation actions? In this case, describe the program.
13. Do you have specific planning documents or policies in place to deal with climate change and its impacts? If yes, what are they?
14. How do local businesses respond to climate change? Adaptation strategies?
15. How do tourists respond to climate change? Adaptation strategies?
16. Are you planning additional or future adaptation / mitigation actions?

Source: elaborated by author

All the interviews were carried out face to face in Italian, in the premises of the participants to reduce interruptions. The interviews were recorded to a tape recorder to have all the details and guarantee the quality of data and ranged from 40 minutes to an hour, varying on the time the participant was capable to provide. Compensation was offered to some of the participants for their time, by buying one of their product and services (e.g. local food and crafts, guided ecotours etc.).

Data analysis

The transcripts of the interviews carried out in Italian were successively translated in English by the native Italian speaker PhD student. The analysis of the data obtained through interviews respected the commonly recognized qualitative techniques, comprising the identification of themes and manual coding of text data into categories and subcategories obtained from participants' perspectives (Stuart & Draper, 2007). As suggested by Kruger and Casey (2009), it was operated directed content analysis with a deductive coding approach to interpret

meaning from content of text data. The organizing procedure of this analysis comprised the following phases: primary, it was employed the vulnerability assessment framework as theoretical base of the salient themes - exposure, sensitivity and adaptation. Secondary, the information has been structured by the important themes and then categories and subcategories have been identified. Thirdly, the results have been systematized based on the important themes, and the categories and subcategories under these headings.

4.3. Results and discussion

Exposure: Climatic and non-climatic shocks and stressors

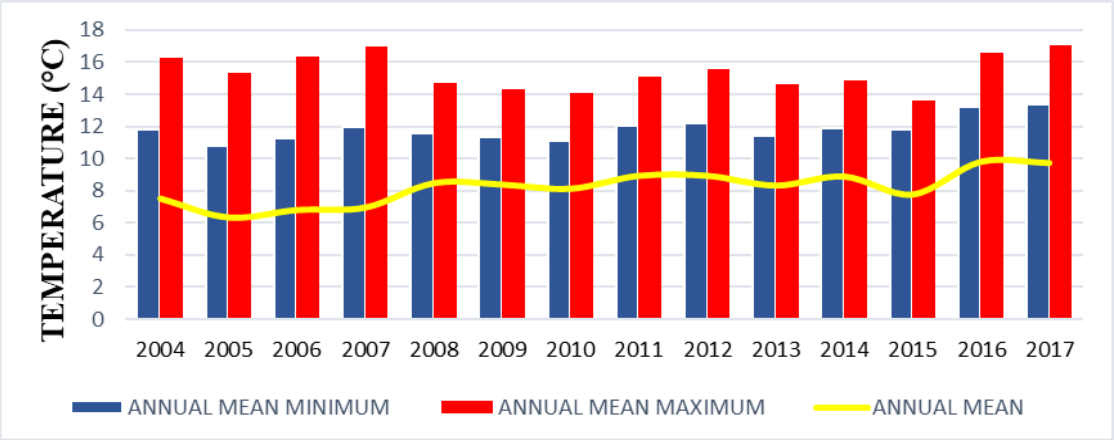
Participants were questioned about their perceptions on the changes in the climate of the NPSM in the past 14 years and whether some of the changes had influenced them to perform their business activities. It is not feasible to determine important climatic changes from the short-period data, however as this research studied participants perceptions of climate variability within a fourteen-year period, it is insightful to analyze whether their perceptions correspond with the recorded trends in climate variability. In order to identify the recorded climatic trends in NPSM, considering that the altitude of the various local communities in the park includes ranges from 450m to over 2000m, the village of Montemonaco was chosen because it is located at an average altitude – around 1000 m.

Moreover, even though participants were questioned to remember trends for the past 14 years, part of them only recall current trends (2013-2018) related to maximum trends of each climate parameters. All respondents noted salient climate changes, in particular increased temperatures, variation of precipitations and the presence during winter of the warmer wind called "sirocco", coming from Africa, causing snow melting and avalanches which lead to business interruptions, infrastructure damage and biodiversity loss.

Approximately eighty percent of respondents reported that temperatures have increased, mainly in the spring and summer periods, which connects with current and long-term climate trends. *The effects noticed are increased temperatures, in some periods, and variation of precipitations (4).*

Figure no. 4.2., suggests that the annual means maximum and minimum temperatures varied during the 14 years period, with annual mean maximum temperatures being 17.5°C and annual mean minimum temperatures being 6.3°C.

Figure no. 4.2 Temperatures for Montemonaco Village, National Park of Sibillini Mountains (2004-2017)



Source: created by author based on the data provided by the by www.regione.marche.it

These trends were observed in the period 2014-2017 and represent the base calculation of the annual mean temperature of 13.4°C (increase of 2.34°C from the average annual mean temperatures from 1950 to 1989). The maximum temperature anomaly was higher than the minimum temperature; 2017 ranks first in the maximum temperature series, before 2016 and 2007. If in January and September temperatures were on average lower than the norm, in all other months the climate was much warmer than the norm everywhere, with peaks average monthly anomaly in March (+ 4.7°C), June (+4.6°C) and August (+5.6°C). This is in line with one of the respondent reported: *There has been extremes of the phenomena, such as a very rigid winter. Moreover, there are the Atlantic disturbance or the Azores anticyclone, but also there are the influence of the African anticyclone or the direct current from the Arctic that, consequently, generate colder climate in winter and warmer in summer, compared with the climate of previous years (4).*

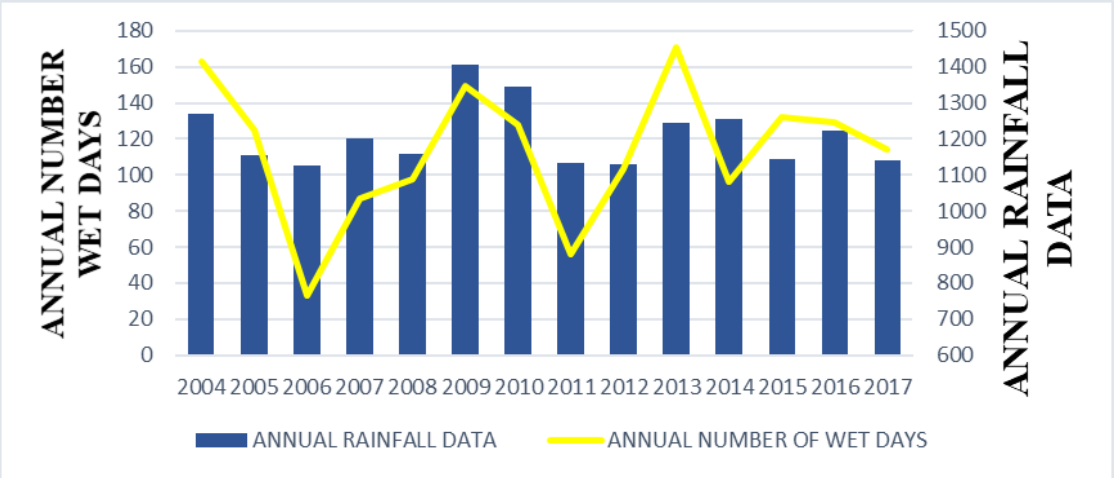
Up until and including the month of August, 2017 was clearly the warmer year than the entire historical series, with a local average anomaly in the 8 months of more than +3°C. In the last 4 months of the year, temperatures returned to values close to the climatological average, significantly reducing the average annual anomaly at the end of the year. On a seasonal basis, the spring (+3.1°C) and the summer (+4.5°C) of 2017 rank first among the hottest of the entire historical series. Conversely, in winter and autumn the average temperature was only slightly higher than the reference seasonal values. This trend is similar to the temperature globally, with an average temperature anomaly of +1.20°C, 2017 was the 3rd warmest year of the historical series after 2016 and 2015, in Italy the value of + 1.30°C places the 2017 in 9th place since 1950 and represents the 26th consecutive positive annual value.

The same participants reported that that number of "hot days" increased, which is consistent with observations regarding the representative heat wave index (Warm Spell Duration Index, WSDI) in 2017, which was higher than the 1950-1990 average; with an average anomaly of about +23 days in the year, for this index, 2017 ranked among the top of the series since 1950. Conversely, the negative anomaly in the number of days with frost in 2017 was among the weakest in the last 10 years, confirming a winter season warmer than the climatological average. Both for the average number of tropical nights, with minimum temperature greater than 20°C, and for the average number of summer days, with maximum temperature greater than 25°C, 2017 is placed at first place of the series since 1950, confirming the strong positive temperature anomalies that have characterized the spring and summer seasons. Regarding the other temperature extremes that are based on comparison with the statistical distribution of normal values, the number of "cold days" was the second lowest in the historical series in 2017, while the number of "cold nights' and "hot days", placed 2017 among the hottest three years of the entire series. The park region, although involved in the main heat waves, have been the scene of numerous thunderstorm events, locally also of strong intensity.

Figure no. 4.3., shows the annual number of wet days and the annual rainfall data during the 14 years period. The peaks of annual number of wet days were observed in 2009 and 2010 at 161 and 149 wet days (an increase of 39 and 27 days from the average). The lowest numbers were registered in 2006 at 105 wet days (a decrease of 17 days from the average), 2012 at 107 wet days, 2011 at 106 wet days and 2017 at 108 wet days. In these years, many respondents reported as a drought years. Furthermore, the mean annual rainfall for the 14 years period was 1166.54 mm, with a peak of 1456.2 mm in 2013 (increase of 289.7 mm from the average), following by the amount of 1415.14 mm in 2004. The lowest annual amount of rainfall was registered in the years 2006 (764 mm) which regularly increased then dropped again in 2011 (881.8 mm).

These variations in precipitation are connected to the statement of more than 70% the respondents in which reported that the climate has become more variable, especially through salient inconsistency in rainfall patterns, with caused dryness one year and rainfall the next, determining biodiversity loss. *There are extreme phenomena. On one hand, there are abounding precipitations which are not entirely absorbed by soil and, consequently, the aquifers are less loaded. On the other hand, the precipitations, even if intense and concentrated in some periods, tend to decrease, causing the drying of springs that feed ephemeral aquatic environments, putting at risk all species of amphibians related to them (5).*

Figure no. 4.3. Rainfall data for Montemonaco Village, National Park of Sibillini Mountains (2004-2017)



Source: created by author based on data provided by www.regione.marche.it

Heavy snowfalls in middle of January, 2017 were reported by the majority of stakeholders, over 90%, and has isolated many municipalities of the Apennines already affected by the earthquake of August 2016 and again, interesting, starting this month, by a new seismic sequence. In the Marche part of the park, the snowpack has reached more consistent thicknesses in the inland areas, with cumulative variables due to the action of the wind; the highest values, between 150 and 200 cm, were recorded on the eastern Apennine slopes while in the western slopes of the Sibillini Mountains the cumulative ones were on average about 100 cm. The concomitance between the seismic sequence of these days and the huge accumulations of snow at high altitude has caused numerous avalanches. Among these, a large avalanche swept the Hotel Rigopiano in the municipality of Farindola in Abruzzo, outside the park, and 29 people lost their lives. The regions affected by these events have suffered damage to power lines, like service interruptions, especially in the park area. There were also problems in telecommunications networks.

In the local communities of the park, the thick snow cover caused the roof of several buildings to collapse, including an accommodation facility and a church, the latter already damaged by the earthquake (9). Other collapses have forced several families to be evacuated. Subsequently, the melting of the snow layer led to the raising of water levels, but above all, the occurrence of new landslides and the reactivation other pre-existing landslides. The critical issues also concerned the agricultural-livestock sector: the thick snow cover caused the collapse or damage to various stables, with consequent loss of animals.

Between 22 and 23 March, 2016 the rains were particularly intense in the NPSM region, where the total rain plots were not exceptional, but the intensities were characterized by return

times between 10 and 50 years in Fermo (105.2 mm in 24 hours), Ripatransone (92.2 mm in 24 hours) and Amandola (89.0 mm in 24 hours). During the event, the snow level passed from 1300 to 700-800 m. The snow levels of thicknesses were generally limited, but the wind caused accumulations even greater than 1 m and were determined conditions favorable to the spontaneous release of avalanches.

In November 2013, the low pressure caused a significant decrease in temperatures and brought extensive, persistent and locally intense rainfall in NPSM. The event reached the maximum values of 499 mm in Pintura di Bolognola, 490.4 mm in Fiastra Trebbio; about one third of the rain gauge of the regional monitoring network detected more than 200 mm of total rainfall on the event. In Castelluccio di Norcia the totals for the event reached 439.2 mm in 72 hours, with estimated return times of around 200 years. The persistence of rainfall has led to critical conditions in most of the region with flooding, roads interruptions, and landslides; several locations have been previously evacuated and the economic damages have been huge.

Almost half the respondents reported that winds have become stronger in the past few years, causing avalanches, which correlate with the current and long term climate change. For example, in spring 2015, on the eastern slopes of the Sibillini, the very strong winds of garbino (libeccio) have caused an exceptional accumulation of fresh snow with consequent destabilization of the snow cover and widespread natural avalanche activity; in particular, a series of large avalanches affected the road network of the municipality of Montemonaco. More, respondents noted that the presence during winter of the warmer wind called "sirocco", coming from Africa causing the decrease and melting of the snowpack. *We have had cases in which, after a big snowfall, suddenly perturbation changed with the arrival of the sirocco, the temperature increase from -7 °C to 17 °C, causing the melting of snowpack in 24 or 36 hours (10).*

This research also studied whether the vulnerability assessment framework facilitated the analysis of the interconnection between climatic and non-climatic stressors and shocks in NPSM and whether some similarities were mentioned in adaptive strategies (Scott et al., 2012). In this context, participants were also questioned about observed changes in socio-economic and environmental shocks and stressors in the past 14 years and whether these have impacted upon their ecotourism businesses.

Various non-climatic shocks and stressors impacting the NPSM'S ecotourism businesses involved the economic crisis which generated a reduction of ecotourism revenues. In this context, the majority (70%) of accommodations owners reported that the economic crisis have generated a drop in in the number of ecotourists overnights. Participants also observed that economic situation affected the spending of tourists, in the sense that people are looking for bargains, preferring to

pay less and buy products that are not eco-sustainable. *I had numerous clients who came here to eat lamb because they know that I have the local lamb. The local lamb here is delicious because we have pastures at 1500 meters, so the herds eat light and fragrant herbs with flowers, therefore the milk, cheese and meat have a special flavor. I buy the lamb here but I pay 11 euros per kg, therefore I sell a portion of grilled lamb with 11 euros. There are restaurants who sell grill lamb for 7.50 euros, because they buy the imported lamb from the meat wholesaler who brings it from Kosovo. Unfortunately, we have to acknowledge that there is also the economic crisis, therefore 50% of the customers who enter in a restaurant look at the price list outside and between grill lamb sold for 11 euros and the one sold for 7.50 euros, they will choose the cheaper one, because there is 3.50 euros difference on the lamb grill, even if the quality is different (8).*

All participants reported that the 2016 earthquakes, as non-climatic shocks, have caused massive destruction of NPSM's natural and cultural attractions, general and tourism specific infrastructure, exposing the ecotourism businesses at a high risk of losing their key resources more than climate change impact. *I believe that, at this moment, these changes are due more to the earthquakes than to climate change (22).*

According to the results, NPSM is exposed to a various range of climatic shocks and stressors, including increased temperature, variation of precipitations, warmer winds causing the snow melting, avalanches and droughts with a significant impact on the ecotourism businesses and infrastructure. These results are similar to a previous study conducted by China et al. (2018) which reported that representatives of ecotourism businesses of two Great Lake destinations argued that climatic stressors and shocks – such as heavy rains, severe extreme events as storms, and unusually seasonal temperatures - affected significantly their activities in terms of client numbers and safety, business operations and profits. The findings of the present research are in line with those of Mkiramweni et al. (2016) which identified climate and non-climate connected shocks and stressors – as recurrent droughts, political unrest, global terrorism and disease outbreaks - and implicit impacts on ecotourism businesses in Ngorongoro Conservation Area, Tanzania. Moghal (2015) identified the economic crisis as non-climatic stressors affecting negatively the development of the eco-sustainable goods and services on the market, which correspond with the present research results. With climate change arising, environmental disasters such as earthquakes are assumed to become more usual as a result (WTO, 2009). In this context, McDowell (2016) highlighted earthquake as significant non-climatic shock affected sustainable businesses in Torfino, an ecotourism destination from Canada, which is also in line with our research results.

Sensitivity (impacts)

Environmental impacts

Climate change affected the ecosystems present in the NPSM. In particular, with the reduction of rainfall and snowfall, there are changes in terms of quantity of the water resource that feeds many ecosystems, such as, for example, Pilato's Lake. In the specific, the size and the water flow of the lake depend mainly on the distribution of precipitation and snowfall. In fact, the lake is fed, in addition to the rains, above all, by the melting of the snows, which cover the surface of the body of water for most of the year until early summer. *The lake might disappear in 100 years completely ... if rainfalls decrease over time, in 100 years we do not know if it will still be there or it will become temporary, only a few months a year* (21). Many interviewees reported that with the reduction of rainfalls and snowfalls, Pilato's Lake - the most significant ecotourism attraction of the park - might shrink or even disappear over the years and consequently generate the disappearance of the Chirocefalo of Marchesone, a branchiopod crustacean of the family Chirocephalidae, endemic to the lake, which represents, as well as an ecotourism attraction, also the subject of study for many national and international researchers. *Also, these reductions of snowfall and rainfall might affect the Pilato's Lake where live the Chirocefalo del Marchosoni* (22).

Moreover, respondents identified important impacts of climate change on wildlife. In addition to the Chirocefalo of Machesone, as described above, other species living at high altitudes, about 2000m, are under risk due to the climate change. An example reported is the Alpine Chaffinch, a passerine bird belonging to the Passeridea family, presented only in very high altitudes, which it eats insects and seedlings that grow near the 'snow-covered valleys'. The latter are small valleys where snow remains for many months of the year and creates a suitable habitat for specific insects and seedlings. As a result of the increasing temperature and the reduction of snowfall, the snowpack remains for a very short time and consequently does not create the perfect habitat for the formation of nutrients for the Alpine Chaffinch, which will be forced to perish out in a very short time due to lack of food. *If before you found the snow valleys until late August, now it is hard for them to arrive in July. For this reason, the Alpine Chaffinch can be a good indicator of climate change (20).*

One participant stated that climate change might have affected vegetation in terms of distribution. He reported that the bushes, present in many areas of the park, over the years have had a positional change. About 30 or 50 years ago, the bushes were present over 1000 meters high, but today it can be found up to a height of 500 meters. This change, which occurred over the years, as stated by the interviewee, may be due to two factors: *by the increase in temperature that led to*

the destruction of the bushes in the highest altitudes or by the reduction of pastures at lower altitudes that favoured the growth of the latter (22).

Socio-economic impacts

In general, the participants reported that weather – which indicates the short-term atmospheric conditions (couple of days up to a season) - and climate – which indicates the mean weather conditions over long term (decades) - affected various facets of their businesses, in term of customer numbers, ecotourists experience and safety, business operations and revenues.

It is very interesting that many respondents mentioned that, in the recent years, ecotourism increased independently of climate change, but they tend to emphasize that tourists are very sensitive in terms of weather. Therefore, regardless of the season, on sunny days the number of tourists increases. These statements are explained by some interviewees with real examples: *On fine winter days there are intense tourist flows attracted by the snowy landscape and the ski slopes, but in case of bad weather, with heavy rains or storms, the presences decrease drastically, almost to disappearance (5). Tourism varies according to weather. If it will rain tomorrow, nobody comes (7).*

Other respondents argued that winter tourism is influenced by climatic variations because, in recent years, they have noticed reductions in snowfall or the limited expected life of snowpack to a couple of days. Everything is explained by the birth of a new phenomenon called 'the sirocco', a warm wind from Africa, which melts the snow in less than 24 hours and, consequently, the winter tourism is drastically influenced by it. One ecotourism guide reported an example: the snowshoeing, in the last period, varied constantly under climate change, in many cases tourists postponed or canceled this ecotourist activity due to the lack of snow or to sudden extreme events. *One of the things I think has changed is snowshoeing during the winter because snowfalls have decreased. Ten years ago we have been busy all days, especially in Christmas period, now is beginning to snow in late January (11).*

Research results reported that climate change is been considered as a major threat to the ecosystems, tourism businesses developing eco-sustainable goods and services, local communities and ecotourism demand of NPSM. Climate change is also accountable for having a negative impact on the ecotourism infrastructure by damaging hiking trails and accommodation facilities. Moreover, climate change have an effect on visitation patterns and ecotourist experience. These results are in line with the previous researches, which argued that climate change is a significant risk for ecotourism businesses in protected areas because it depend on natural attractions - such as wildlife and landscapes – and specific infrastructure that are sensitive to climate change

(Mkiramweni et al., 2016; Becken & Job, 2014; IPCC, 2014). Findings reported here indicated that the winter period is the most challenging and vulnerable in the NPSM, since most climate pressures and damaging effects happen. Therefore, these threats generate more problems to ecotourism businesses. According to Moghal (2015), climate change have a negative impact on ecotourism activities and seasonality causing lower profitability and weaker sustainability of ecotourism businesses. Nevertheless, China et al. (2016) argued that climate change could also offer opportunities for ecotourism businesses in protected areas by generating profits through lengthening the shoulder seasons, such as spring and autumn.

Research results reported here indicated that increased temperatures aggravate the degradation of water resources, wildlife and landscapes in NPSM. These results are similar with to other researches (Jamallah & Powell, 2015; Mkiramweni et al., 2016; Nyaupane & Chettri, 2009) that indicated environmental crises in terms of biodiversity loss and water resource scarcity in natural protected areas, due to climate change. In some protected areas, climate change generated important modifications in geographic distribution, diversity and density of wildlife species and their rates of migration (Moghal, 2015).

Adaptation

Adaptation policies

The management of the NPSM indicated that there are no explicit policies aimed at climate change adaptation, because there are no scientific data that can confirm the phenomenon as a real threat or a cause of many changes within the park, but they can only elaborate hypotheses to try to understand which are the elements at risk under climate change. *We have no scientific data to indicate that an actual threat related to climate change exists, but we have indications that make it clear that some ecological elements are more at risk than others, in particular, the species related to high mountain environments (22).*

The park management reported that have developed indirect, through the renewal of the European Charter for Sustainable Tourism, sustainable policies, based on the principle of conservation and valorisation of the park, which serve to reduce the emissions that consequently generate the climate changes. *It is the institutional task of the park itself that goes in this direction. In the moment in which conservation and valorization are done, automatically, we are thinking in the perspective of sustainability (20).*

Moreover, the park manager argued that all the activities developed in connection with the biodiversity monitoring are also aimed at understanding what changes have occurred because

of climate change. *We always pays more attention when monitor biodiversity to understand also the changes in relation to climate change (21).*

In addition to the conservation and valorization measures of the protected area, also in the Natura 2000 Sites - community interest sites' network for the protection and conservation of habitats and species, animals and plants - the actions developed were finalized from a perspective of a possible threat under climate change. *Even in Natura 2000 sites exist conservation measures that are, clearly, in connections with actions that can derive from climate change (22).*

Moreover, the interviewees highlighted the fact that at the national level, the authorities elaborated a sustainability strategy that, subsequently, will be transferred to the regions and implemented by the latter according to their territorial context in order to introduce actions that serve to mitigate change climate. *It is also starting the national strategy for sustainability which is then implemented at the regional level. Each region then, in agreement with the State, adopts its own sustainability plan, which includes all the parameters that have been discussed for years with the aim to reduce the impacts of climate changes (20).*

Focusing on the actions developed by the park authority regarding sustainability and, consequently, aimed at reducing emissions, the interviewees reported some actions with concrete examples. One of these was the concession of the Park's emblem, granted only to those businesses that carried out an ecological management of their own activities, and subsequently, conferred a direct contribution to the environment preservation. *For example, the concession of the park's emblem was granted only to those farms that reduced their ecological footprint (22)*. Another example was the implementation by the park management in collaboration with local authorities of 'soft' mobility concept – public mobility service - in order to reduce emissions generated by the private vehicles. *Another element of adaptation, even to climate change, is to encourage soft mobility… in our case, we started a collaboration with the regions to improve public mobility or collective mobility just for a reduction of emissions that are directly responsible for climate change and is always inherent in sustainability (21).*

Technical practices

Respondents mentioned numerous technical sustainability practices that indirectly reduce the emissions generating climate change and, therefore, may diminish the park's vulnerability. For instance, an interviewee explained that a technique to avoid plowing - the classic way of working the soil to create a hospitable environment for plants - was the building of 10 cm mantle of earth in order not to kill all the microorganisms present in it and to let the earth works alone. *I do not do plowing. I cover the earth because it needs the 10 cm mantle and all the*

microorganisms that are on the 10 cm when you do the plowing you kill them (7). Moreover, he highlighted the fact that the use of plastics in agricultural activities represents a damage to the environment as it is not biodegradable and therefore, another sustainable technique proposed by him is the use of straw, which involves more work, but at the same time, it generates more advantages than plastic, such as fertilizing the soil. *With straw we do a greater job…straw does not cost anything, it is biodegradable, it makes mulch, fertilizes, gives nitrogen and in practice makes different soil. With plastic it's easier, but you have to dispose it and it doesn't make the soil comfortable (14).*

Another techniques carried out by the interviewee are represented by biodynamic activities, a set of pseudoscientific practices based on the anthroposophical spiritual vision of the world with the aim of an agriculture activity in greater balance with the terrestrial ecosystem. *We do a biodynamic activity in order to take care of the plants and not keep the insects here (18).*

Respondent 16 mentioned the technique of the synergistic vegetable garden - processing the garden without the use of chemical fertilizers, fossil fuels and technologies - used and diffused because it represents a real sustainable economy.

Another interviewee, owner of an ecotourism business, explained the importance of networks, connections with other entities in the park, such as farmers, dairies, accommodations, ecotourism guides etc., in order to develop and then maintain eco-sustainable goods and services. *There are series of activities that I need to develop and I cannot doing by myself. I have a thousand of synergies and collaborations with farmers, the publishing house, the archaeologist, the park management, B&B business owners, guides etc. (14).*

Another technique detected by the interviewees is the culinary one. Inside the park, all catering activities maintain recipes and techniques of the past and with local products. For instance, the pork meat is cooked in perfect Piceno style (The Picenes were an Italic people who lived from the 9th to the 3rd century BC in the area between the Foglia and Aterno rivers, bordered to the west by the Apennines and to the east from the Adriatic coasts. Therefore, the Piceno territory included all of today's Marche and the northernmost part of Abruzzo) and flavored with three local herbs. The same technique is used for the lamb meat, but with the difference that the latter was flavored with eleven local herbs. *The pork meat have been flavored with only three herbs and the lamb have been flavored with eleven herbs and has been soaked in wine for several hours (16).*

In addition to culinary techniques, respondents mentioned processing techniques of the local products. Thanks to this technique, defined as sustainable, many products, such as the Proscuitto from Norcia, Lentils from Castelluccio etc. are sold to local businesses and over the world, generating huge economic revenues for the entire Sibillini Park area.

Within the park the processing of wild herbs and plants for culinary and medicinal purposes has become an example of sustainability. An interviewee explains that with the technique of distillation - tending to point out that not all distillers can get the same results - it can be find the heart of the plant, or how they define it, the soul of the plant, which is then used for therapies replacing antibiotics. *The distillation is used to find the soul of the plant…if you do not find it you cannot use it for therapies instead of antibiotics (17).*

Environmental education

Environmental education is one of the main elements of sustainability and, for this reason, the park authority develop specific activities aimed to disseminate - both to the stakeholders directly involved in the park activities and to ecotourists - appropriate management and respect for the environment. As reported by the park director, *Greater visibility is given to all those activities and services that operate as 'environmental quality suppliers' and adopt measures aimed at guaranteeing environmental quality or, in some cases, to the education centers or park guides which are real allies of the park in the awareness and environmental education activity (20).*

Therefore, within the park there are many figures and activities aimed at environmental education such as the park guides, the education centers and the tourism information points that represent the most important and direct environmental educators for the ecotourism stakeholders. As mentioned by an interviewee, the guides are present in the most critical areas of the park, such as the Pilato's Lake, the Red Blades etc., because the latter represent sensitive areas with significant annual tourist flows and, consequently, must be monitored in the best way possible. But, above all, the guides try to deliver environmental education, explaining the reasons for some prohibitions or some constraints imposed by the park management. *You will find the guides only in the sites and in the critical areas of the park, which are: Forca di Presta; Infernaccio; Pilato's Lake; Bove Mountain and the gorges of the Fiastrone. These are the five sites with large numbers of tourists that have always been monitored by the park (4). Consider that we, as guides, monitor from the Dam that leads to the Red Blades and in addition, we provide information (5).*

In addition to all the activities directly connected with the park authority, many interviewees stated that their commercial activities involved experiences of environmental education through sustainable ecotourism activities. An example is the project "Silva Pagus" developed by a ecotourism business owner, whose aim is to educate tourists to sustainable and responsible attitudes towards nature through a zero impact on the environment and breaking them away from the technological world, as all ecotourism activities and experiences take place in an

isolated and pristine area of the park, adjacent to a nature trail and with purely eco-sustainable facilities and equipment. In addition, the respondent mentioned that: *this project serves to make it clear that each of us needs nature and, for this reason, you must respect it and by learning to respect it, you will learn to respect yourself (18).* He highlighted that the ecotourism experience, in addition to a naturalistic itinerary, included *a food route, environmental interpretation, but above all, environmental mediation (18).*

Another interviewee, explained the mission of its sustainable activity, which represents an alternative food network based on training and formation of recognition in the field and harvesting wild plants, their cuisine and their promotion for ecotourism in accommodation facilities (B&B, agro tourisms, restaurants, holiday homes) of NPSM, using environmental education and fulfilling all three pillars of sustainability – environmental, economic and social-cultural. *Today, during climate change and recession, it is particular important to train people to harvest wild plants in a sustainable manner in order to conserve this precious resource of high quality food and wellbeing (17).* Therefore, ecotourism stakeholders involved in this activity can learn to avoid industrial farming and rely less on supermarkets, thereby reducing the chain of pesticides and herbicides, mass production, long distance transport, refrigeration, packaging and marketing. Resource efficiency, connected with environmental awareness, empowers participants to become custodians of environmental equilibrium. Learning to respect plants and biodiversity, while improving people's health, offers a synergy of anthropocentric and bio centric benefits – a green message our society is in urgent need of.

Business management practices

Business sector in the park represents the real motor for achieving sustainability development, and indirect mitigating and adapting to climate change impacts. An interviewee highlighted the fact that, after the earthquakes – as non-climatic shocks – tourism, commercial and agricultural activities, etc. have managed to maintain the production of eco-sustainable goods and services. *For example, the Paradise Corner (dairy local business) had for a while the replacement stables because the former were damaged and for some time they went on like this, without problems, and more, in the production of cheese it won, for two years, the 'Francia Corta' as a prize for the best products (1).*

The interviewee highlighted that in order to maintain their customers, businesses have continued their activities through relocation or reconstruction, with personal or national and international charities funds, because the Italian legislative for post-earthquake reimbursement funds was a slow and challenge process. *Someone has organized and put containers and various*

things, someone has renovated adjacent structures. For example, the hotel did some work for the damaged rooms caused by earthquake without the money from the state (3).

Moreover, one interviewee reported the fact that the accommodation facilities of the historical centers of each local community must be rebuilt in the same style, all in stone, with the same floors and color, as they are bound by the state, instead, outside the historic center it is possible to reconstruct them at will, respecting the rules of landscape decoration. *If you have a guesthouse outside the center, where there is not specific regulations imposed by the state, you can do as you wish, (...) instead if you are in the historical center you are bound and you cannot remove a floor. Externally, it must be rebuild as it was before the earthquake (5).*

In addition to commercial activities, the earthquakes destroyed also some of the cultural attractions belonging to the UNESCO heritage. To avoid changes or alterations of the patrimony, the national and local authorities imposed for its reconstruction the same materials and style as before earthquakes. As one interviewee mentioned *Now they are fixing the town's bell tower in the square, they will dismantle it and they will do it again with a steel supporting the inside structure, but outside with the same stones and position as before. The same thing will be done in the church of San Benedetto (2).*

Interviews showed that in various activities, despite the strong shock, they did not suffer damage and continued their activity. A guesthouse with a fifth century's structure that has not suffered any injury represents an example and, probably, as explained by the manager of the structure, everything happened thanks to the 10 years restructuring carried out with high quality local materials. *This dining room, in fact the whole building, which has been renovated, and dates back to the early 5th century, was renovated with 100% Italian materials, 90% from park area - Umbrian artisans - and the remaining 10% comes from the Marche or from Tuscany (12).*

Interviews argued that in the park there are many economic activities that develop eco-sustainable goods and services. From the culinary and food point of view, activities, such as restaurants, shops, groceries etc. offer a range of local products requested by tourists and, in many cases, are exported throughout Italy and abroad. *There is still the possibility of buying the salami, the homemade ciauscolo (Italian meat specialty) directly from the producer, you can buy the lamb from the farmer. Also for the cheese (...) to buy pecorino (Italian sheep cheese specialty), I supply myself from different local companies (8).*

Each local community is distinguished from one another by the uniqueness of the typical local product. As the interviewees reported, Norcia is the most important local community, famous for the Norcineria (specific local grocery shop) which sells all its local products such as Norcia ham, Norcia black truffle, Castelluccio di Norcia lentils, cheeses and many other products. *We*

make truffle pastas and sauces here. All cheeses come from the Norcia dairies. The lentil is from Castelluccio of Norcia. Honey is from a local producer (...) Liqueurs and bitters are from Torgiano. The 'best sold' local products are: Norcia ham, Norcia black truffle, Castelluccio lentil, Norcia pecorino, one or two types of salami (...) Customers want what they know (2).

Other local community, Visso, is famous for its ciauscolo; *here is the ciauscolo of Visso. (5).* Instead, in the villages of Fiastra there are companies that produce goat cheese. *A very small company that makes goat's cheese in Cupi is Scolastici; they are good at making some types of flavored cheeses (5). The Pastorello, in Cupi, makes a cheese with herbs, a semi-seasoned which is a little spicy, but very good (8).*

In addition, the owner of the Il Giardino delle Farfalle (Butterflies Garden) in the Cessapalomba village has created a 'sustainable' pizza, with a long leavening dough, produced entirely with local products, such as the tomato of its own cultivation, and flavored with herbs, flowers and spices grown in their garden. *The pizzas we make are gourmet, that is to say, pizzas based on exquisite local products. Here there is nothing but our tomato with basil (...) then we also use flowers to flavor pizzas and therefore it is not only an eco-sustainable product, but also an experiential one (7).* This activity, in addition to offer the 'sustainable' pizza, has a huge garden with different types of plants in order to attract butterflies - ... *it is an attractive plant with an enormous olfactory level for butterflies because it practically gives off an extraordinary perfume and butterflies can perceive it (7).* This ecotourism business has several aims, one of these is to be able to make guided visits and environmental education for the children being equipped with a facility used as a museum, called the Butterflies Museum, and a special structure to illustrate the reproduction process of the butterflies. Moreover, they organized for the children tasting tours with different types of pizza or spelled. - ... *for example it is the tasting we are doing with children. It means different types of tastings of pizza, spelled (7).* As the owner mentioned, his work is mainly focused on school tourism or families with children. Another goal is to use plants and flowers for culinary purposes, such as flavoring pizza, using nettles to cook lentils or for spice production. The interviewee reported: *We can make three harvests of wild fennel. Then, the flower, which is the 'yellow gold', because of its price, it can be used in the kitchen, but also in cosmetics, perfumery and in any other fields. More, it can also be used for extraction of essential oils and the stem. You can use the stem under oil on the pizza, on the meat and in anything because it is an exceptional aroma of the Sibillini, a native product and is sustainable (7).*

Still in the culinary field, the interviewee reported that in order to valorize the products of the park, such as 'ciauscolo' or Prosciutto di Norcia, he prepared different types of 'sustainable' bread with different flours (spelled, corn, pumpkin, etc.) because, according to him, a local product

must be accompanied with another local product to avoid altering tastes. *We make different types of bread – spelled, bread with 5 to 7 cereals, bread made from pumpkin or chia flour and seeds. If I am selling you the 'ciauscolo' or the cheese of the Sibillini on a slice of bread that is not good, you do not eat that product, you do not value it (18).*

In addition, he argued that the use of sustainable, seasonal dishes prepared with different local products attract the tourists, offering an excellent culinary experience that make them come back again. To explain better, he hypothesized some thoughts that tourists could do: "*Do we want to go and eat pizza with chicory because chicory or summer truffle is now in season?" Therefore, you seasoned some products and make them available to the people who come here (7).*

From the interviews, it emerged that an ecotourism activity in order to make known the traditions and the culture of the Cessapalombo area of the park, organizes literary walks, based on the novel named Arathia, to rediscover the ancestor city of the Piceni people. *In 1956, the excavations were done with volunteers and one of them was my grandfather (13)* on the Castro Mountain, between Codardo and Rivellino Mountains, where fragments of the ancient fortification dating back to the Piceni were found in the territory that today includes the park. *Tomorrow evening we will make the literary walk to the rediscovery the Picena city, one of the largest cities of the Marche Picena (...) an area of 10 square kilometers, where there were estimated between 13,000 and 18,000 people, fourth century BC, where they cultivated some cereals that we no longer have today (7).* Arathia, a novel written by the owner of the Butterfly Garden together with a well-known writer, tells a love story between two natives of the Piceno City, recalling historical periods. As the interviewees reported, after spending an afternoon immersed in nature with historical explanations, they enjoyed a medieval Piceno-style dinner. The dinner was based on local products from the past, served in terracotta plates, accompanied by the archeologist's explanation on the food preparation phases and Piceni history. *The pork chops are flavored with three herbs (...) the lamb chops are flavored with 11 herbs and have been soaked in wine for several hours. (...) we served a Pecorino (cheese), a very soft first salt, and a Pecorino di Fossa. The sautéed chicory is seasoned with an oil produced according to the Picena tradition (16).* The dinner ended with the display and sale of some Piceni objects, such as brooches, earrings, etc., made by the archaeologist. *All the objects have been made with an ancient technique based on the elimination of oxygen from the oven and for this reason they are black (...) and from the lack of uniformity, we can certify that they are handmade (19).*

Notwithstanding increasing awareness regarding the impacts of climate change, NPSM ecotourism stakeholders still have not developed specific climate change adaptation measures. This may possibly indicate insufficient information, understanding and investigation of climate

change impacts and vulnerability. Moreover, taking into account the recent disaster events, tackling climate change does not represent a high priority for ecotourism stakeholders from NPSM protected area, in contrast with significant direct and immediate non-climatic stressors such as earthquakes (McDowell, 2016). Nevertheless, several sustainable ecotourism management strategies in protected area indirectly moderate the environmental and socio-economic effects of climate change.

This research results are in line with the others (Hall & Williams, 2008; Scott et al., 2009) which also reported an indirect package of climate change adaptation measures for ecotourism businesses, comprising diversification of products through the development of eco-sustainable goods and services, marketing, cost management, and weather-proofing ecotourism activities. The development of ecotourism as a breakthrough strategy for maintaining the goods and services eco-sustainable of local communities from protected areas on the market represents a usual approach of decreasing the vulnerability of an economic system (Jamallah & Powell, 2017). It might generate a decrease in seasonality, a growth of ecotourism markets, and a moderation of impacts on the ecosystem exposed to climate change.

The ecotourism stakeholders of NPSM developed several eco-sustainable tourism products and services, containing hiking, guided tours for observing the wild flora and fauna and local communities' culture and traditions, camping, canoeing, snowshoeing, biking; and new tourism types, such as slow food tourism. For instance, the management of NPSM, in cooperation with the owners of the park restaurants, created the Sybilla Menu, comprising a variety of dishes prepared with the traditional methods and local products. Offering different opportunities for ecotourists to consume local products and to experience ecotourism accommodations connected with a local vernacular design generate operative efficacy, diminished costs, significant competitive advantage, and excellence of the services and the ecotourist experience (Jamaliah & Powel, 2017; Niles, 2010). Nevertheless, the development of ecotourism as a strategy to maintain eco-sustainable goods and services on the market will decrease leakage and improve the spreading of economic advantages between stakeholders and diminish the impact on the frail environment, mainly under climate change. It is presumed that destinations offering a variety of eco-sustainable tourism goods and services are more prepared to cope with risks and changes (Biggs, 2011).

Ecotourism stakeholders of NPSM developed various environmental management measures regarding water resources, grasslands, wildlife habitat development and environmental education. These measures contribute in biodiversity preservation and also in moderating the vulnerability of the ecosystem under climate change negative impacts by diminishing unreliable exploitation of natural resources and developing adaptation policies (Jamaliah & Powell, 2017;

Sekhran et al., 2010). As an example, by implementing landscaping and zoning within NPSM, the management of protected area clearly support adaptation measures to climate change through spatially arranging sensitive areas (Jamaliah & Powell, 2017; Sekhran et al., 2010). Moreover, ecotourism businesses in NPSM are administrated in a sustainable way. For instance, the project Silva Pagus, located in Cessapalombo village, was created to be an example of ecotourism accommodation. Including environmentally friendly measures in ecotourism specific infrastructures and activities can considerably support the conservation of the environment by stimulating sustainable usage of natural resources and reducing the destructive effects of tourist activities on the protected areas. Leung et al. (2015) argued that appropriate environmental management of ecotourism specific infrastructure would provide adaptation and mitigation support for a tourism destination under climate change. Moreover, the development of ecotourism as a strategy for maintaining the goods and services eco-sustainable on the market, dependent on local products and labor, supports environmental adaptation and mitigation by minimizing or even substituting the natural resource-dependent activities of local communities from protected areas, such as overgrazing or logging.

Research findings indicated ecotourism stakeholders from NPSM are organized in strong social networks. This highlights the fact that ecotourism businesses are considered to have solid social relationships based on association (Rowland, 2009). Moreover, ecotourism stakeholders from rural areas, such as NPSM, commonly have durable degrees of social cohesion (Hofferth & Iceland, 1998). Efficient social networks provide an accessible way for exchanging information and raise awareness of the impact of climate change and possible mitigation and adaptation actions (Nam, 2011).

4.4. Conclusion regarding the assessment of ecotourism vulnerability to climate change

The objective of the research conducted was the evaluation of the vulnerability of ecotourism in NPSM under climate change impact through the identification of business stakeholder's perceptions regarding the circumstances and measures that could improve its adaptation to climate change. In this context, it examined the climatic and non-climatic stressors and shocks and the subsequent environmental and socio-economic impacts and also the adaptation measures for tackling climate change impacts. The research results revealed that the ecotourism NPSM is exposed to climate change, mainly to increased temperature and variation of precipitations, signifying that it represents a major threat. This indicates that the development of ecotourism as a breakthrough strategy for maintaining eco-sustainable goods and services of local

communities from protected area on the market leads to the adaptation of tourism stakeholders to climate change. The research also reported that ecotourism stakeholders of NPSM might offer essential solutions that could be valuable in the efforts to adapt to climate change through environmental and socio-economic measures, which is similar with the findings of Ager et. al (2011) indicated that local data and knowledge represent significant tools in elaborating appropriate adaptation measures. The research conducted also indicated the future necessity to study the barriers to climate change adaptation of ecotourism businesses from protected areas. In particular, it will be necessary a longitudinal research that might identify these obstacles to implementation and measures of ecotourism businesses to counteract the climatic and non-climatic stressors and shocks and the actions that improve adaptation and diminish vulnerability.

Finally, this vulnerability assessment framework offers a complete understanding of the multifaceted connections between environmental and socio-economic measures that might possibly improve the ability of the ecotourism businesses from protected areas to adapt to climatic and non-climatic stressors and shocks. Understanding the current environmental and social-economic impacts of climate change on ecotourism businesses from protected areas, represents a major planning instrument to assure effective development of ecotourism as a strategy to maintain goods and services eco-sustainable on the market to an uncertain climate change future.

CHAPTER 5. ELABORATING AN ACTION PLAN TO INCREASE THE ADAPTIVE CAPACITY OF ROMANIAN AND ITALIAN LOCAL COMMUNITIES THROUGH ECOTOURISM IN PROTECTED AREA TO CLIMATE CHANGE IMPACT

Climate change represents a global concern with repercussions on the natural environment and the current human society, their effects will also be feel by future generations, which has led to global action by policy makers and research funding bodies (Bardsley & Wiseman, 2012). Invariably, the interaction between human society and the natural environment determines exposures and sensitivities, as well as the modeling of adaptation capacity by different social, cultural, political and economic forces (Smit & Wandel, 2006). The tourism industry, developed in a sustainable way, can be a solution in adapting to climate change by raising awareness of the challenges of these changes, as well as by increasing the level of accountability among local communities, tourists, authorities and stakeholders, creating opportunities for sustainable economic growth, protecting the environment and, implicitly, mitigating the effects of climate change.

Establishing a common vision is a way for local communities to integrate the goals and principles of adaptation into a holistic manner, can lead to the setting of adaptation goals for a later stage. The vision can be considered an assertion which projects the image that a community can have in the future and needs to be determined through a participatory process. Through the adaptation planning process, a clear vision sets out how a climate-adapted community looks like, which can translate into a general call and a catalyst for changing the approach that targets the community's resilience to change climate (Giordano, 2014). Therefore, the proactive approach involves preparing for imminent climate change by reducing the vulnerabilities and associated risks through ecotourism development.

5.1. Develop a plan containing guidelines on adaptation to climate change

Adaptation calls for the development of effective sectoral policies and involvement in maximizing environmental benefits and, in the present case, for local communities in protected areas. However, taking action on adaptation can prove provocative, but taking into account climate change in protected areas in the short, medium and long term, planning is feasible regarding the vulnerability reduction and resilience strength. In this respect, it is necessary to draw up guidelines on which to base the approach:

1. Raising awareness among the local population, tourists and stakeholders about climate change and their impact on communities in protected areas;

Climate change is an emerging property of complex environmental systems, which in turn are influenced by complex human, social, cultural, economic and political systems. Awareness of climate change means reflecting this complexity and being multi-dimensional, not just focusing on particular variables, such as carbon dioxide emissions. Beyond all, awareness of the effects of climate change has to be applied in practice, to diminish the uncertainties of the communities and to determine the decision-making based on the most reliable information and in accordance with its own ethical values (http://arts.brighton.ac.uk).

At the level of local communities, in terms of tourism development, awareness must also be reflected in the behavior of those who come in contact with them - tourists and investors. This involves the development of new technologies - low-emission gas transport vehicles-, investment in energy-efficient materials, responsible use of resources, etc.

2. Identification and synthesis of information on vulnerabilities and risks associated with climate change, as well as adaptation through planning decisions, specific policies and investments;

Climate change is not only a matter of a well-defined sector - climate, but involves all the economic, social, cultural, environmental systems that are affected overall. Climate specialists, on the basis of their research, provide all the other sectors with the necessary information on the evolution and perspectives of climate change, on the basis of which the latter elaborate strategies, policies and adaptation plan regarding the risks, impacts and vulnerabilities associated with climate change.

3. Development of technical capacity to prepare for climate change;

Developing a technical training capacity involves, on the one hand, needs-based training programs that focus on natural and socio-human systems, by developing studies to assess the impacts, risks and vulnerabilities of climate change, implications on the environment and its integrity. Training programs should cover a wide range of technical issues and be addressed to all stakeholders in order to strengthen technical capacity to cope with the effects of climate change at local, regional and national level.

Natural disaster and climate disturbance risk management is based on the technical capacity of climate data collection and monitoring equipment, geographic information systems, on the quality of information technology services that are available in organizations to support adaptation actions to climate change impacts (OECD, 2009).

Applying risk management methods is necessary to identify, assess and prioritize options to reduce vulnerabilities to possible economic, social and environmental implications.

4. Adopt an integrative approach to adaptation that should be mainstreamed into local, regional, national policies, plans and practices;

Adaptation implies innovative ways to unite the efforts, commitments and knowledge of different groups and individuals who can, by their own means, contribute to achieving a common goal, namely, developing the resilience of a community and territory.

Human society and the environment are in a relationship of interdependence, which implies that the planning and the actions taken for adaptation are consistent with both human and environmental needs. The symbiotic approach empowers local communities to manage ecosystems in terms of elasticity management, which can provide ecosystem based services (e.g. ecotourism services) (http://gender-climate.org).

5. Strengthening community partnerships that reduce vulnerability and risks to climate change (Snover et al., 2007);

Co-operation and coordination between local authorities and community partners is a successful formula used by local communities involved in planning climate change adaptation actions. Partnerships with government agencies, community associations, non-profit organizations, academia, or neighboring communities must be considered. Partnerships facilitate data collection, community education, and mobilization of stakeholders, implementation and monitoring (Boswell et al., 2011). Such a successful partnership is the ***public-private partnership*** that systematizes the possibility of these two elements to act on the issue, assessing the possible synergies existing with the creation of mutually beneficial conditions for all partners. This highlights the fact that private partners find advantageous their own contribution with economic and technical resources to solve the problem that the public partners cannot manage by themselves, this condition being especially valid in the presence of externalities and interconnections between motivational factors such as adaptation to the changes climate. Thus, stakeholders become an

integral part of the community alongside authorities and residents in efforts to adapt and promote sustainability.

6. Elaborate strategies in line with ecosystem requirements, in order to develop their elasticity and protect the critical resources that local communities from protected areas depend on, to reduce the vulnerability of residents and natural systems in the context of climate change;

Analyzing all the above and taking into account the rapidity of the phenomenon, it is reiterated the need to develop an integrated strategy for local communities. This involves the collaboration of all socio-economic partners on the basis of the common sustainable development objectives, customizing the strategic initiative on the requirements of the dependent ecosystem, on the basis of the economic vitality and prosperity of the local community and aiming at an integrated and efficient management of the risk associated with climate change, the need to create a sustainable infrastructure. Engaging and informing all partners correctly provides motivational support for adapting to the changes that will take place, ultimately ensuring the success of this approach.

7. Prioritization based on the degree of vulnerability **-** protected areas, local communities, infrastructure, architectural heritage – by involving all stakeholders;

Understanding the vulnerability degree of ecotourism assets to climate change, in this case, is an important part of decision-making and policy-making for adaptation as it provides the basis for prioritization. By developing a risk profile, the vulnerabilities characteristic of each asset are summarized, whether it is protected areas, local communities, infrastructure, architectural heritage, etc. The goal is to act as a source of information and as an instrument in the development and prioritization of adaptation strategies for responsible bodies. Beyond the identification of these vulnerabilities, data on the potential overstressing of these ecotourism assets are simultaneously obtained, which allows the development of the best adaptation strategy (http://mtc.ca.gov).

8. ***Maximizing mutual benefits*** through strategies to support related environmental initiatives, such as optimizing natural disaster preparedness, promoting sustainable resource management, reducing greenhouse gas emissions by developing innovative and cost-effective technologies from the point of view of costs;

The interdependence between natural, social and economic environments involves new ways of approaching and acting to ensure a future in which nature and human society coexist with mutual benefits by eliminating the abuse of natural resources and social shortcomings.

In the case of ecotourism development must be ensured the quality of the environment, which is not a preoccupation only for local communities, but represents the most valuable asset of the ecotourism destination that focuses on natural beauty and attractions. Protecting and preserving the environment is therefore a mutual benefit for authorities, companies, tourists and, of course, for local communities. From a regional perspective, development is a cumulative and circular process based on specific elements (space / territory, distance, transport costs, natural and human resources, etc.) and a number of comparative and / or competitive advantages that cause differentiated spatial developments and imposes certain categories of intervention in accordance with local needs (Zaman et al., 2015).

Through association (UNCTAD, 2013), stakeholders can plead more effectively for better environmental management (creating and enforcing regulations, developing innovative technologies), cost-cutting savings (public-private partnerships), expanding benefits (implementing a waste management system, improving the infrastructure, investing in the protection of cultural, architectural heritage, implementing programs aimed at reducing greenhouse gas emissions, etc.), which, beyond adaptation to imminent changes the climate, the community as a whole will develop and strengthen a competitive power.

9. Continuous performances evaluation by setting measurable objectives and performance criteria to assess the results of implementation of adaptation actions;

Decisions on adaptation can be taken at any level by individuals, local communities, institutions, national authorities or international organizations that are interested in assessing the performances or relative merits of alternative measures and strategies. This assessment of adaptation performances is based on criteria such as costs, benefits, equity, efficiency and degree of implementation (Giordano et al., 2013). The information is subject to quantitative and qualitative analyzes.

10. Develop a transparent communication between stakeholders on ecotourism development in protected areas to deliver effective planning based on awareness of the need to adapt to climate change;

Clear and effective communication, along with stakeholder engagement, is the most effective way to overcome emerging barriers to adaptation, leading to a successful adaptation process, and by publicly disseminating results, the community will see if the actions have determined the desired results. Moreover, the dissemination of experience and lessons learned through faster, more complete and easier exchange, as well as the dissemination of information, will provide evidence that these adaptation actions need to be funded and supported politically.

Communication as a continuous process implies the exchange of information, an essential condition for good adaptation, and information on climate change, its impacts and possible adaptation actions must be processed and included in personalized communications to reach different audiences. Examples of good practices from other communities contribute to encouraging the adaptation process and enable learning (Scharl, 2010).

Investigating communication strategies and processes that work between different study disciplines and stakeholders also reveals hidden hypotheses and misconceptions about climate change, contributes to mutual understanding of existing issues and suggests priorities for research and development policies.

Participants in the communication process will benefit from the synergy of competences and resources, establishing and maintaining the dynamics of information exchange, flexible cooperation modes based on horizontal communication and mechanisms to facilitate joint decision making (Giordano et al., 2013).

All the previously identified action directions contain common elements essential to the climate change adaptation plan / strategy, the degree of importance varying according to the specificity of the adaptation process and the stakeholders involved. In the present case, given that the assessment of the current situation as well as the forecasts on the future evolution of climate change shows that they represent a major risk for tourism, more emphasis can be put on specific scientific research, for gathering information and data to support the actions of the partners involved.

Education and communication also require substantial investment to increase awareness and involvement from residents, tourists and other stakeholders.

5.2. Identifying operational management tools at the level of local communities in the sense of awareness of the importance of correlating actions taken with climate change in the development of ecotourism

Protected areas can play a major role in reducing impacts and adapting to climate change if their management is sustainable, which is also reflected in food security, poverty eradication, sustainable development and sustainable land-use. Effective management ensures the survival of terrestrial and marine ecosystems, enhancing their environmental, socio-cultural and economic functions, which positively affects the contribution to mitigate the effects of climate change but also adapt to the new conditions caused by them. Protected areas management is not exclusively focused on climate change adaptation, but also on many other objectives that complete the holistic, integrated approach: protection of soil, water, flora and fauna, production of goods, preservation of biodiversity, provision of social and cultural services, support for the style traditional life, poverty eradication, etc.

Managing practices on mitigation and adaptation to climate change must be planned and implemented in tandem, as the two actions are complementary and must create synergies, being correlated with other objectives for the protected area (FAO, 2010).

The management of local communities in protected areas in the context of climate change underlines the importance of innovative approaches, best practices and partnerships. Climate change creates new challenges, opportunities and constraints for management in protected areas, changes that are reflected in: the natural environment; the socio-economic environment, especially in the communities dependent on the goods and services related to the protected area; legislative policies and regulations; communities and stakeholders.

Creating adaptability to climate change requires permanent contact with local community residents as an integral part of implementing sustainable management, involving them in developing strategies and requesting continuous feedback.

In the relationship with residents in local communities, their needs need to be identified so that the message addressed to them determines the involvement of communities and facilitates the change of attitude, in the present case, in relation to ecotourism development. Correlated to strategies implemented at the top of communities, the message is transmitted by well-informed, trustworthy voices that can influence the positive reaction of local communities.

Communicating individually manageable solutions and actions is a way to make it easier to understand how to adapt to climate change by developing ecotourism. Scientific data

must be the strict concern of specialized bodies, while communities must be offered potential solutions to environmental issues and actions they can take individually and which can have a positive effect (rational water consumption, differentiated selection of waste, rational electricity consumption, etc.).

These continuous actions will not only have a positive impact on the environment but will reflect obvious economic benefits, thus changing the attitude and behavior of the residents and, by their involvement in tourist activities, of the tourists.

It is important that when local population involvement is required, to be offered also the means to actively participate in these actions (e.g. for differentiated waste selection, authorities must offer special containers and a well-established collection program free of charge). Thus, it is possible to easily integrate these actions in daily activities, developing the feeling of belonging to a community involved as a whole, in actions to protect the environment.

Highlighting the current effects of climate change on the community and the protected area can raise concerns about future impacts and risks to the life and well-being of the local community, as well as the integrity of the natural heritage. On-site information campaigns can have an immediate impact on the community and can increase awareness of imminent changes.

Thus, situations such as: the disappearance of plant and animal species or threatened by extinction and what impact they may have on biodiversity (e.g. disappearance of wolves in an area implies an uncontrolled increase in the number of herbivores that can damage large areas of vegetation - which store CO2, but also the number of diseased specimens, which, unterminated by the natural process, can lead to the illness of the other individuals); the occurrence of extreme natural phenomena (floods in areas with massive deforestation of forests - the largest amount of CO2 is stored, which leads to landslides, the destruction of dwellings, and sometimes irreversible displacement of communities), the degradation of the cultural, architectural heritage closely linked to the natural area.

Awareness and accountability will be easier to achieve if they are correlated with real situations, sometimes specific to the local community to which they are addressed.

Developing partnerships involves new opportunities to address climate change issues for a wide audience, from diverse sectors and at different decision levels. Involving, for example, the media partners, communication will be greatly facilitated and will obviously have a stronger impact on the audience, raising the overall level of awareness.

The audience is not only formed by members of a local community but also by those who want to visit it. Exposing current and potential climate change issues will require a responsible behavior on their part. The responsibility of the tourists will lead to the emergence of certain requirements regarding the type and quality of the tourism products and services they require, which will also imply a responsibility of the communities regarding the protection of natural and anthropogenic resources, services. This aspect can be viewed as a bidirectional one, the eco-sustainable behavior of one party influencing the behavior of the other.

In creating such partnerships, a common language should be considered, facilitating communication and understanding of the objectives pursued, opportunities for participation of all partners in the process of adaptation through the development of sustainable activities (ecotourism) must be offered, which makes the communication process of the partners essential and their voices harmonized in a common goal: protection, conservation, sustainable development. A vital partnership is with educational institutions as they prepare the new generations that will inherit the natural and anthropic heritage and which will reflect the current actions of mitigation and adaptation to climate change.

The involvement of the institutionalized educational factor creates the premises not only of the emotional and intellectual involvement of young people in the protection of the environment, but also of the sense of power regarding the possibility of changing the future of the world they belong to as future leaders, as resource recipients.

Empowerment among young people can be accomplished by involving them in various activities, whether they are game, communication, or environmental education, within protected areas, so that they have direct contact with nature and create a an emotional bridge in awareness of the effects that climate change can have on them. Trainers can create networks of experiences in protected areas to support and connect young people willing to get involved at a professional level, through NGOs or as rangers, guides, travel agents, etc., promoting sustainability as essential in emerging actions to adapt to climate change.

Ecotourism development of local communities in protected areas is shaping up as a solution to mitigate the effects of climate change in the process of adaptation. Attenuation can be achieved by reducing energy consumption and using renewable energy (wind, thermal, solar). By replacing tourism products and services specific to mass tourism to ecotourism, the local community is also involved as an integrated provider of transport, food, accommodation and specialist services (guides, travel agents, etc.) with beneficial effects on the local economy and

the standard of living, which will also reflect on the favorable attitude towards the actions of the adaptation process.

5.3. Designing an architecture to integrate ecotourism development measures for local communities in protected areas under the impact of climate change in tourism policies

Climate change is currently one of the major challenges for all decision-makers at local, national, regional or global level and the ecotourism industry, directly dependent on climate change and environmental impact, has to face this challenge by developing strategies to adapt to climate change that can affect ecotourism products and services. At the same time, policies to mitigate the impact of tourism activities on enhancing the effects of climate change must also be implemented.

Tourism policies targeting local communities in protected areas must address the following specific objectives, integrated into the socio-cultural, economic and environmental structure of communities:

- economic viability;
- prosperity;
- the quality of employment;
- social equity;
- physical integrity;
- community welfare;
- local control;
- cultural wealth;
- biodiversity;
- purity of the environment;
- efficient use of resources;
- fulfilling the tourist requirements (UNEP, 2006).

These areas of influence also determine ecotourism development in communities in protected areas as part of the integrated vision for adapting to the effects of climate change.

A ***tourist destination*** is considered economically ***viable*** and competitive on the market if it offers development prospects and long-term benefits. And in the case of ecotourism, sustainable development is required to provide benefits to the community, either by investing in

infrastructure, protecting the environment and cultural heritage, or by benefiting from its own business (accommodation, food, guide services, craft products etc.). Facilitating and encouraging the marketing of local production by tour operators brings immediate benefits to local communities, which can be regulated by local policies. Finally, local communities closely linked to protected areas have a predilection for consumption and use of natural resources in relation to the environment. Thus, co-ownership of local producers ensures a better relationship with the natural environment, which does not exclude the existence of accountability and awareness programs on imminent climate change.

In terms of employment in ecotourism activities, research has been too few, but the upward trend in the development of problem ecotourism has to be widely explored. However, although job opportunities were created, most people of those involved in ecotourism did not give up traditional economic activities - fishing, farming, livestock farming or logging. This empirical conclusion can accredit the idea that, indeed, some of the ecotourism jobs do not require a high level of training, which allows residents to have inter-occupational mobility (Monterubio & Espinosa, 2013).

However, the ***quality of the workforce*** makes the difference in terms of the competitiveness of the destination and of the services offered, and therefore residents have to be involved in training programs in order to be integrated into ecotourism activities and to avoid hiring out-of-community staff. Training programs should also involve information on climate change and how operators can diminish the effects of these changes through their activities. Ecotourism employees will be implicit in the messengers of their community and can influence the behavior of tourists.

Social equity ensures fair distribution of economic and social benefits from ecotourism activities, which will be reflected in better living standards for locals based on sustainable development. Equity will also be reflected in the distribution of jobs, in ***the decision-making factor***, by involving residents, giving them the power to make the best decisions for the community and the ***physical integrity*** of protected areas, avoiding the physical and visual degradation of the territory. As the natural environment is the foundation of tourism, local communities must adopt appropriate legislation to protect it and ensure its ***well-being*** through ecotourism activities.

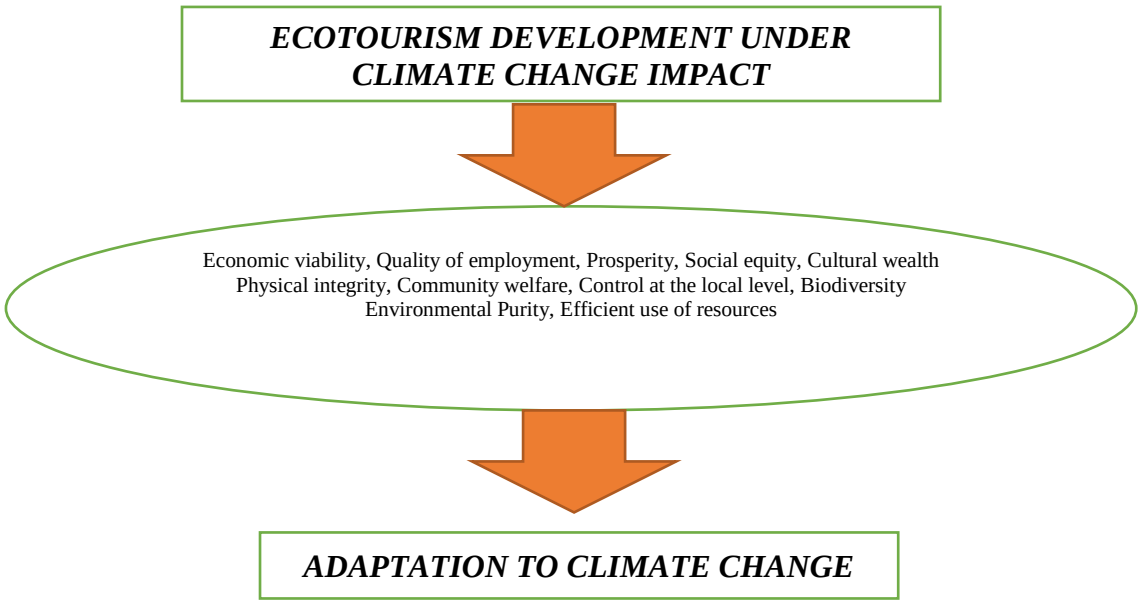
Involvement in the decision-maker on the management of ecotourism development in communities must be based on partnerships, dialogue between all stakeholders. Participation (Fiorello & Bo, 2012) in decision-making all means power distribution, knowledge extensions, collaboration to ensure benefits and solve problems and tensions between stakeholders. Exercise of power involves a certain level of ownership, control and influence, which, through the intensity

of control, makes the difference between traditional forms of ecotourism and ecotourism based on local communities in protected areas. If in the first case, the decision-making power is held by external operators and the community members are used as a work force, in the latter case, the community is the one who really controls all aspects of the implementation of ecotourism, and the consequence of this difference is the impact on community. Members of the community are also involved in climate change adaptation decisions and the aim is to influence ***the efficient use of resources*** by minimizing the consumption of scarce and non-renewable resources in tourism development and minimizing air, water and land pollution and generation of waste from tourism activities, in order to maintain the ***purity of the natural environment***. Protected areas - wetlands, tropical forests, alpine areas, mangrove forests, coral reefs - are the ecosystems most affected by degradation, areas with a very important touristic potential.

Effective resource use can not only be seen from the perspective of the impact on the destination but should quantify the total energy consumption and emissions resulting from the various components of the tourism system as a whole (Higham, 2007) (e.g. transport to the ecotourism destination).

Conservation of **biodiversity** is vital to the survival of communities in a balanced habitat and, together with soil, water, climate conditions is essential in determining the flow of renewable resources of an economy and, in the present case, in ecotourism development.

Figure no. 5.1. Ecotourism Development under climate change impact



Source: elaborated by author

The integration of cultural heritage is ineluctable in ecotourism development, the journey focuses towards knowledge of local traditions, art and heritage, respecting the host community and its environment. Experiencing the lifestyle of local communities is part of the tourist experience, along with visiting and understanding the natural environment that defines their existence.

Cultural heritage summarize community beliefs and values, and ecotourism development without taking into account local culture equates to the dehumanization of ecotourism experience. The assessment of ***tourism experience*** (Walkera & Moscardo, 2014) is necessary in activating or changing the values, beliefs, attitudes and sustainable actions relevant at the destination as well as in other socio-economic environments.

The implementation of measures aimed at achieving the above-mentioned objectives in order to develop tourism-specific policies can only be achieved in the context of the overall objective of integrated ecotourism development, adaptation to the effects of climate change.

CONCLUSIONS

In accordance with the issues highlighted in the research reference, the topic of the thesis presents a salient degree of originality, as it was less approached internationally; priority is given to the interconnection between local communities in protected areas, ecotourism as an instrument of developing goods and services eco-sustainable and as a breakthrough strategy for maintaining them on the market under the climate change impact. Moreover, if the theoretical approaches still existed, the practical solutions offered were insignificant and of a general nature. Defined by these coordinates and based on a comprehensive analysis of a rich literature circumscribed to the subject, international experience and the realities of the Italian and Romanian tourism, the architecture of this thesis is designed to facilitate the author's direct involvement in the classification of theoretical and methodological issues and the settlement of practical issues, such us:

Chapter 1. Assessment of the present stage of ecotourism as an instrument of developing goods and services eco-sustainable of local communities from protected areas has dealt with the issue of ecotourism from the perspective of the development of eco-sustainable goods and services as a necessity in the management of natural and anthropic resources, both in protected areas and in the regions that integrate them.

The approach was an intrinsic one, based on the analysis of the concept of ecotourism as a philosophy of the welfare of local communities by preserving the environment and cultural heritage, emphasizing the integrative dimension in the environment - sustainable development of eco-sustainable goods and services - local community. Therefore, have been highlighted the specific issues, the advantages and disadvantages of eco-sustainable goods and services development through ecotourism in the local communities in the protected areas under economic, social, political or environmental aspects and the necessity of this development has been argued, balancing the emerging benefits with controllable impact through appropriate structured measures, effective strategies and policies.

In the Chapter 2. General considerations regarding ecotourism potential evaluation of local communities from protected areas, it have been made an assessment of tourism resources of the National Park of Sibillini Mountains that can offer opportunities for ecotourism development, respectively those associated with the natural and anthropic environment, the eco-sustainable goods and services. In addition, it have been assessed other factors that might stimulate the development of ecotourism like the potential of the domestic and international tourism market and whether it is interested in the tourist attractions offered by the local community. The evaluation

has been made through inventory the components favourable to ecotourism and by means of some indicators, which permit the determination of the size of ecotourism development. In this context, it is essential to highlight the importance of elaborating a set of appropriate indicators for ecotourism development to ensure a fair, objective assessment comparable to other localities or areas.

In accordance with the methods and practices in the field, the results of the international experience, in the Chapter 3. Elaborating an assessment model regarding the development of goods and services eco-sustainable of local communities within the protected areas through ecotourism, it has been conducted a complex field research aiming at identifying the main ecotourism assessment indicators of the local communities and on this basis designing a model, the steps to follow in substantiating the decision to develop eco-sustainable goods and services through ecotourism in a protected area. The model considers as reference elements the tourism and economic-social resources of the protected area, the structure of leadership, the potential markets and the typology of tourists, etc. as objective variables as well as the receptiveness to the development of eco-sustainable goods and services by the host populations.

The research was conducted on two levels: a qualitative research based on semi-structured interviews with local community representatives that aimed to obtain information on the receptiveness of residents towards the development of eco-sustainable goods and services through ecotourism and the appreciation of the results of this activity compared to others that could be developed at local level. Qualitative research and the results of the SWOT analysis, provided the basis for the quantitative research, which it aimed to assess the attitude and intent of the local community in the protected areas, based on questionnaire interviews, to four major steps in the development of eco-sustainable goods and services through ecotourism: minimizing environmental damage, minimizing socio-cultural damage, maximizing the economic benefits of local communities and operational and quality management. Two Likert scales with three gradations were used (disagreement, no agreement or disagreement, agreement) for a set of 17 sentences on the development of eco-sustainable goods and services through ecotourism. Descriptive statistics were utilized for data analysis, and the Spearman coefficient was applied to evaluate the attitude-intention relationship. The Spearman test indicated the significantly positive correlation between attitude and intent in two dimensions: minimizing socio-cultural damage and maximizing the economic benefits of the local community through the development of eco-sustainable goods and services through ecotourism. There is no significant correlation between attitude and intent in minimizing socio-cultural damage and operational management and quality. Therefore, it can be concluded that the local community level in the national park is open to the

development of eco-sustainable goods and services through ecotourism, as an alternative to economic growth and improvement of living conditions.

On the basis of the undertaken, developed, exemplified investigations and supported by the research results, has been elaborated an evaluation model regarding the development of goods and services eco-sustainable, conceived as a system of objectives, stages and actions to be followed in a process of argumentation of the development opportunity of a local community in protected areas. The orientation towards the development of goods and services eco-sustainable through ecotourism is primarily conditioned by the awareness of the local communities - authorities, economic agents, non-governmental organizations, local people - about the advantages and risks involved. Furthermore, the decisions should be based on: inventory and rigorous assessment of resources / attractions to ensure long-term development, determining the receptiveness of stakeholders in the local community towards the development of eco-sustainable goods and services through ecotourism and measuring their economic, socio-cultural and environmental impacts.

Correlation of information obtained from such research - obligatory for viable, successful businesses - with experience gained in other areas and the results of statistical and mathematical modeling is able to provide the best projection of ecotourism strategies and policies.

The aim of the qualitative research conducted in Chaper 4. was the assessment of the vulnerability of ecotourism in NPSM to climate change impact through the identification of business stakeholder's perceptions regarding the circumstances and measures that could improve its adaptation to climate change. The research undertook a qualitative approach, which engaged the case study as research strategy - National Park of Sibillini Mountains and its ecotourism strategy – and applied the Vulnerability Assessment Framework to examine the exposure, sensitivity and adaptability of this particular local system to climate change. The data have been collected through semi-structured interviews, based on interview guide which included specific questions intended to obtain the salient topics related to vulnerability, to identify the climate change associated threats, the related economic, social and environmental impacts and adaptation strategies used by ecotourism stakeholders from local communities of NPSM in order to maintain/develop the eco-sustainable goods and services under the climate change impact. The organizing procedure of data analysis included the following stages: first, it was utilized the vulnerability assessment framework as theoretical base of the essential themes - exposure, sensitivity and adaptation. Second, the data has been structured on the themes and then categories and subcategories have been identified. Third, the results have been categorized based on the themes, and the categories and subcategories under these headings.

In this context, it have been analyzed the climatic and non-climatic stressors and shocks and the subsequent environmental and socio-economic impacts and also the adaptation measures for facing climate change impacts. The research results indicated that the ecotourism in NPSM is affected by climate change, mainly by increased temperature and variation of precipitations, signifying that it might be an important threat. This highlights that the development of ecotourism as a breakthrough strategy for maintaining eco-sustainable goods and services of local communities from protected area on the market conducts to the adaptation of tourism stakeholders to climate change. The research also indicated that ecotourism stakeholders of NPSM might provide important solutions that could be essential in the actions to adapt to climate change through environmental and socio-economic measures.

The vulnerability assessment framework provided an extensive understanding of the complex relations between environmental and socio-economic actions that could conceivably improve the capacity of the ecotourism businesses from protected areas to adapt and mitigate the climatic and non-climatic stressors and shocks. Understanding the current environmental and social-economic impacts of climate change on ecotourism businesses from protected areas, represents an important planning tool to guarantee operative development of ecotourism as a strategy to maintain goods and services eco-sustainable on the market to an uncertain climate change future.

The research conducted also reported the future necessity to study the barriers to climate change adaptation of ecotourism businesses from protected areas. In particular, it will be necessary a longitudinal research that might identify these obstacles to implementation and measures of ecotourism businesses to counteract the climatic and non-climatic stressors and shocks and the actions that improve adaptation and diminish vulnerability.

Based on the presented actions and responsibilities presented in the Chapter 5. Elaborating an action plan to increase the adaptive capacity of romanian and italian local communities through ecotourism in protected area to climate change impact, it can be concluded the possibility of implementing ecotourism as a strategy for maintaining ecosustainble goods and services of local communities on the market under the impact of climate change at the protected area level. For this, there is a need for intensive collaboration among all stakeholders in order to achieve common goals and actions, especially if we take into account the benefits that the parties can get.

Thus, the management of the protected area and the local authorities have the task of supporting and developing ecotourism under the impact of climate change by: inventorying and informing about the elements of ecotourism and how they are affected by climate change; the development of environmental management strategies, plans and programs that include measures

to adapt to climate change, economic and social development and marketing, based on natural, anthropic and financial resources; continually reviewing, adapting and updating community goals and actions to meet ecotourism market requirements, setting up facilities for ecotourist operators and tourists.

It is also necessary that local authorities support the involvement of ecotourism stakeholders in adapting to climate change by: elaborating, implementing and monitoring innovative development schemes to increase quality standards, setting up organizational management structures based on leadership to develop and organize public-private partnerships to pursue community interests, create a solid identity, increase the level of education and training on climate change of human resources involved in ecotourism activities, etc.

The funds needed to implement ecotourism development objectives and actions as a strategy for adapting to climate change in protected areas can be accessed through the European Union's financial support programs for areas vulnerable to climate change. All these actions (initiatives, projects, funds and programs) will help to bring ecotourism assets closer to the expectations of potential customers, improve quality and quantity, and diversify the services offered.

The materialization of these measures and the strategic objectives will undoubtedly ensure a better utilization of the specific resources available to local communities and, in this way, the promotion of ecotourism as a strategy for adapting to climate change in protected areas.

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ANNEXES

Annex 1

Selection criteria of the experienced local communities in National Park of Sibillini Mountain, Italy

Table no. 1 - Organization structure category

Categories	**Score**[128]	**Acquacanica**	**Bolognola**	**Castelsantangelo sul Nera**	**Cessapalombo**	**Fiastra**	**Fiordimonte**	**San Ginesio**	**Ussita**	**Visso**	**Amandola**	**Montefortino**	**Arquata del Tronto**	**Montemonaco**	**Montegallo**	**Norcia**	**Preci**	**Pieve Torina**
Organization structure																		
Communities leadership	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Village council	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Tourist association	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Commercial association	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
ONG communities	2															2		
ONG not- communities	2																	
Other	1																	
Subtotal	**11**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**8**	**6**	**6**

Source: elaborated by author

[128] Score elaborate by author for all tables

Table no. 2 - Goods and services eco-sustainable category

Categories	**Score**	**Acquacanica**	**Bolognola**	**Castelsantangelo sul Nera**	**Cessapalombo**	**Fiastra**	**Valfornace**	**San Ginesio**	**Ussita**	**Visso**	**Amandola**	**Montefortino**	**Arquata del Tronto**	**Montemonaco**	**Montegallo**	**Norcia**	**Preci**	**Pieve Torina**
Goods and Services Eco-sustainable																		
Places' silence and quietness	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Cleaning/waste management	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Uniqueness of natural/artistic/historical/archaeological/geologic patrimony	2	2	2	2	2	2	2	2	2	2	2	2		2	2	2	2	2
Park's visiting centers	2					2				2	2					2		
Park's site	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Informative materials of Park	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Rest places/Belleview points	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Guided visits/Didactical activities	2					2					2	2		2	2	2		

Museums and geological and cultural sites	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Festivals, cultural programs and traditional activities organization	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Existence of code of conduct of the Park	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Existence of ECOLABEL certificate	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Certifications of local product (IGI, DOP, etc.)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Others	1																	
Subtotal	**30**	**25**	**25**	**25**	**25**	**29**	**25**	**25**	**25**	**27**	**29**	**27**	**25**	**27**	**27**	**29**	**25**	**25**

Source: elaborated by author

Table no. 3 - Natural attraction category

Categories	**Score**	**Acquacanica**	**Bolognola**	**Castelsantangelo sul Nera**	**Cessapalombo**	**Fiastra**	**Fiordimonte**	**San Ginesio**	**Ussita**	**Visso**	**Amandola**	**Montefortino**	**Arquata del Tronto**	**Montemonaco**	**Montegallo**	**Norcia**	**Preci**	**Pieve Torina**
Natural Attractions																		
Caves	1															1		
Mountains	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Protected areas	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Waterfalls	1																	
Lagoons	1													1				
Sea	1																	
Forestry	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Natural path	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Wild nature	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Culture	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Other	1			1		1						1				1		
Subtotal	**11**	**6**	**6**	**7**	**6**	**7**	**6**	**6**	**6**	**6**	**6**	**7**	**6**	**7**	**6**	**8**	**6**	**6**

Source: elaborated by author

Table no. 4 - Communities connection-resource category

Categories	**Score**	**Acquacanica**	**Bolognola**	**Castelsantangelo sul Nera**	**Cessapalombo**	**Fiastra**	**Valfornace**	**San Ginesio**	**Ussita**	**Visso**	**Amandola**	**Montefortino**	**Arquata del Tronto**	**Montemonaco**	**Montegallo**	**Norcia**	**Preci**	**Pieve Torina**
Communities connection – resource																		
Sea/fishing	2												2			2		
Forest/agricultures /hunting	2																	
Hill/agricultures/huntin g	2																	
Rivers/fishing/transport	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Other	1																	
Subtotal	**9**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**4**	**2**	**2**	**4**	**2**	**2**

Source: elaborated by author

Table no. 5 - Existing ecotourism activity category

Categories	**Score**	**Acquacanica**	**Bolognola**	**Castelsantangelo sul Nera**	**Cessapalombo**	**Fiastra**	**Valfornace**	**San Ginesio**	**Ussita**	**Visso**	**Amandola**	**Montefortino**	**Arquata del Tronto**	**Montemonaco**	**Montegallo**	**Norcia**	**Preci**	**Pieve Torina**
Existing ecotourism activity																		
Accommodation with breakfast 1-3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Host accommodation	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cottage 1-3	3							1			1			1		1	1	
Shop	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Restaurant /Bar	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Canoeing	1					1										1		
Organized Tour	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Hiking	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Boating	1					1												
Fishing	1					1										1		

Fish exploration	1																	
Swimming	1																	
Diving/snorkelling	1																	
Observing birds	1																	
Archaeological sites	1																	
Communities traditional	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Other	1																	
Subtotal	**25**	**13**	**13**	**13**	**13**	**16**	**13**	**14**	**13**	**13**	**14**	**13**	**13**	**14**	**13**	**16**	**14**	**13**

Source: elaborated by author

Table no. 6 - Infrastructure/accessibility/transport category

Categories	**Score**	**Acquacanica**	**Bolognola**	**Castelsantangelo sul Nera**	**Cessapalombo**	**Fiastra**	**Valfornace**	**San Ginesio**	**Ussita**	**Visso**	**Amandola**	**Montefortino**	**Arquata del Tronto**	**Montemonaco**	**Montegallo**	**Norcia**	**Preci**	**Pieve Torina**
Infrastructure/accessibility/transport																		
Highway	3																	
National roads	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Local roads	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Airport	3																	
Bus	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Taxi	3										3					3		
Neighbourhood with other villages	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Neighbourhood with important cities 1 h	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Telephone	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Radio	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Energy	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Running water	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Guides promotion	3															3		
Internet promotion	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
ONG Italy promotion	2																	
Other	1																	
Subtotal	**39**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**27**	**24**	**24**	**24**	**24**	**30**	**24**	**24**

Source: elaborated by author

Table no. 7 - Ethical components category

Categories	**Score**	**Acquacanica**	**Bolognola**	**Castelsantangelo sul Nera**	**Cessapalombo**	**Fiastra**	**Valfornace**	**San Ginesio**	**Ussita**	**Visso**	**Amandola**	**Montefortino**	**Arquata del Tronto**	**Montemonaco**	**Montegallo**	**Norcia**	**Preci**	**Pieve Torina**
Ethical Components																		
Italian	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Romanian	1			1		1					1	1	1	1	1	1		
German	1															1		
English	1															1		
Population < 500	1	1	1	1	1				1									
Population 500-1000	3					3								3	3		3	
Population >1000	2						2	2		2	2	2	2			2		2
Other	1																	
Subtotal	**11**	**2**	**2**	**2**	**2**	**5**	**3**	**3**	**2**	**3**	**4**	**4**	**4**	**5**	**5**	**6**	**4**	**3**

Source: elaborated by author

Annex 2

Table no. 1- Interview guide with the deputy mayor of the Norcia municipality

No.	INTERVIEW GUIDE
1	Has the municipality of Norcia developed eco-sustainable goods and services, such as public renewable energy?
2	What contributions made the municipality to the commercial activities of the territory of Norcia in order to develop good and eco-sustainable services?
3	What activities have been carried out in order to maintain eco-sustainable goods and services within the municipality of Norcia?
4	Does the municipality plan to develop other eco-sustainable goods and services? If yes, which ones?

Source: elaborated by author

Annex 3

Table no.1- Interview guide with the Manager of National Park of Sibillini Mountain, Italy

No.	INTERVIEW GUIDE
1	What measures, imposed by the Law "decrees earthquake" have been applied by the Park's management?
2	In addition to "decrees earthquake", which tools have been used by National Park of Sibillini Mountains in order to maintain eco-sustainable goods and services, after the 26th of August, 2016 earthquake?
3	Have the local communities implemented the measures imposed by law, as ordinances, in order to maintain the consumption of goods and services eco-sustainable?
4	The Park' management has elaborated or will elaborate post-earthquake strategy in order to maintain or increase the consumption of eco-sustainable goods and services?

Source: elaborated by author

Annex 4

Table no. 1- Interview guide with the restaurant business

No.	INTERVIEW GUIDE
1	Has your business developed eco-sustainable goods and services? What impact did it have on tourists?
2	Why did you develop eco-sustainable goods and services in your business?
3	In the menu restaurant have been promoted the certified products such as IGP etc.? What is the impact on tourists?
4	What was the contribution / the incentive of the Park Authority / Public Bodies to develop eco-sustainable goods and services in your business?

Source: elaborated by author

Annex 5

Table no. 1- Interview guide with accommodation businesses

N.	INTERVIEW GUIDE
1	Has your business developed eco-sustainable goods and services? What impact did it have on tourists?
2	Why did you develop eco-sustainable goods and services in your business?
3	Do you have any eco certification for your business?
4	What was the contribution / the incentive of the Park Authority / Public Bodies to develop eco-sustainable goods and services in your business?

Source: elaborated by author

Annex 6

Table no. 1 - Profile of the respondents

No.	ACTIVITIES	RESPONDENTS	GENDER	AGE	LOCATION	EXPERIENCE	DATA PROVIDED
1	*Park Information Point*	Manager	F	35	Amandola	8 Years	Interview
2	*Local Products Shop*	Owner	M	60	Norcia	40 Years	Interview
3	*Ecotourism guide activities*	Park Guide	M	50	Montemonaco	14 years	Interview
4	*Ecotourism guide activities*	Park Guide	F	50	Infernaccio Gorges /Monteforti no	25 Years	Interview
5	*Park Information Point*	Manager	F	50	Fiastra	25 Years	Interview
6	*Ecotourism guide activities*	Park Guide	M	60	Pilato Lake /Foce	40 Years	Interview
7	*Business Activity "Butterfly Garden"*	Owner	M	38	Cassapalombo	15 Years	Interview
8	*Accommodation and Restaurant*	Owner	M	50	Fiastra	30 Years	Interview
9	*Fruit Shop*	Owner	M	45	Norcia	25 Years	Interview
10	*Ecotourism guide activities*	Park Guide	M	50	Castelluccio	20 Years	Interview
11	*Ecotourism guide activities*	Park Guide	M	50	Montemonaco	20 Years	Interview
12	*Accommodation and Restaurant*	Manager	F	35	Norcia	10 Years	Interview
13	*Organizer of the literary walk*	Park Guide	M	38	Cessapalombo	15 Years	Interview
14	*Restaurant "Butterfly Garden"*	Manager	M	38	Cessapalombo	15 Years	Interview
15	*Ecotourism guide activities*	Park Guide	F	34	Montemonaco	-	Interview
16	*Event Medieval Dinner*	Event Manager	-	-	Cessapalombo	-	Interview

17	*Business Activity "La casa delle Erbe"*	Owner	F	65	Amandola	40 Years	Interview
18	*Business Activity "Butterfly Garden"*	Manager	M	38	Cessapalombo	15 Years	Interview
19	*Private Business Artefacts*	Owner	M	30	Cessapalombo	4 Years	Interview
20	*Park Administration*	Park Director	M	60	Visso	35 Years	Interview
21	*Park Administration*	Park Executive Manager	F	55	Visso	30 Years	Interview
22	*Park Administration*	Park Environmental Responsible	F	53	Visso	30 Years	Interview

Source: elaborated by author

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