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Tourism in nature reserves and peripheral rural areas: Issues and strategies

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Abstract

The delicate balance between human occupation and conservation policy is a concurrent conflict of historical, economic and cultural nature. Societal reasoning is a clear-cut understanding that the implementation of conservation policy brings loss, while this is a comfortable situation for conservationists, it brings serious consequences to communities. In such places the decreasing investment along with the loss of the main economic local activities, eventually causes demographic decline, which, in turn, results in aging of the population, culminating in a critical situation with no innovation and poor exchange between socio-economic actors. In a context of worldwide tourism sector expansion and development, tourism sustainability performance of such regions or countries becomes an important goal of strategic planning to ensure an appropriate balance between present and future opportunities. Bearing in mind that peripheral areas have usually been characterized by a low level of autonomy in planning capability, with poor access to and from markets, not included in travel itineraries except from a small portion of independent tourists.

The current paper analyses two different case studies, the first in the small fishing village of the Cape Verde's Archipelago, Santo Antão Island where the peripheral community of Monte Trigo was surveyed to understand the impact of the solar electricity facility implementation, along with their views on development. Being Tourism one of the most cited options, it is important to evaluate the risks and different types of tourism. The second case study involves the Natural Park of Serras D'aire and Candeeiros (PNSAC), using Census data and Geographical Information Systems analyzed the impact of conservation legislation on the demographic evolution of communities inside the Park. Results brought to evidence the abandonment of traditional economic activities, thus promoting a different trend of demographic development in peripheral Park regions.

Despite the geographical distance and Ecological differences between Coastal Islands and mountainous continental interior, both case studies share and represent both weak and strong tourism sustainability paradigms. Moreover, the core sustainability performance of the studied regions is comparable, which can serve as a starting point that stimulates public and private debate, thus promoting improvement actions to achieve tourism sustainability.

1. Introduction

Protected areas are paramount for nature conservation, livelihoods of rural residents, and tourism development since the founding of the first natural park in Portugal (ICNF, 2018). As demarcated territorial units for "restricted" human use, under the slogan of protecting wildlife and ecological processes, protected areas, for much of their history have been interpreted as exclusion sites (Dudley, 2008). Many Nature Parks forged under the strategic management principle of implementing protection, in most cases, the ideal effective management strategies collided with legal restrictions and the resident's rights to their livelihoods in those territories (Solikuab & Schramlc 2018).

According to the current IUCN definition of protected areas, the classification is clearly defined as the geographical space, recognized, dedicated and managed through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (Casson et al. 2016). This current classification comprises a different approach to the previous division where the human presence was "neglected" as part of the management strategy. The Natural Park division is now defined as a Protected area with sustainable use of natural resources: Areas which conserve ecosystems, together with associated cultural values and traditional natural resource management systems. Generally large, mainly in a natural condition, with a proportion under

sustainable natural resource management and where low-level non-industrial natural resource use compatible with nature conservation is seen as one of the main aims. Furthermore, the 75 per cent rule should apply with $\frac{3}{4}$ of the total area based around the primary management objective(s), this classification also considers different types of governance (Casson et al. 2016).

In general, large protected areas, will include or overlap some form of peripheral regions, in Europe such regions hold little economic interest, with limited resources or harsh living conditions where anthropic influence was kept at minimum levels (Nelson & Chomitz, 2011). The meaning of the term “peripheral” which in the literature is mentioned with divergent connotations, such as geographical, social, political and economic, in this paper it involves social and economic disadvantages, lack of technological infrastructures and political weakness together with a certain degree of geographical isolation.

In “peripheral” places, mostly rural areas or remote areas, the pressures on the main economic locally based activity, such as Agriculture or fishing, can be attributed to factors from climate change, resource overexploitation or changes in food production. Such problems associated with the needs for better living standards led to the eventual demographic decline and abandonment and the consequent decrease and aging of the population (Salvatore et al., 2018).

If to the “peripheral” characteristics we associate the Protected area status the conflict will increase the already existing problems and make them even more difficult to solve. Some studies bring to evidence the pressure on Protected Area boundaries, where urban development, industry and tourism prosper. Literature predicts that by 2030 in Europe, urban areas and residential developments will expand around most protected areas (Brambilla & Ronchi, 2016). Such issues will increase the pressure on the Protected areas biodiversity balance leading in some cases to conflicts between wildlife and people, thus compromising the overall management. Communities located at the boundaries PAs usually bear the costs of conservation, which include, economic losses generated by protected animals such as attacks to livestock and crop damages, or even exclusion from resource exploitation (Rakshya, 2016; Castro-Prieto, 2017; Lamichhane, 2017).

Nevertheless, there are some ways in which local people may profit from nature conservation such as ecosystem services and tourism. A basic principle is if local communities increase their benefits from a PA, they will support their existence (Lusetyowati, 2015; Lamichhane, 2017).

In a context of worldwide tourism sector expansion and development, tourism sustainability performance of peripheral regions or countries becomes an important goal of strategic planning to ensure an appropriate balance between present and future opportunities. According to the World Economic Forum (2017), the tourism industry represented at 2016 10.2% of the world's GDP and generates 292 million of jobs. The international arrivals reached 1.2 billion, an increase of more than 46 million compared to 2015, and the number of international tourists is estimated to reach 1.8 billion by 2030. New trends in tourism demand authenticity, remoteness and nature (Dickinson & Lumsdon, 2010; Salvatore, 2018).

The current paper analyses two different case studies, the first in the small fishing village of the Cape Verde's Archipelago, Santo Antão Island where the peripheral community of Monte Trigo was surveyed to understand the community's opinion on the impact, satisfaction and future perspectives resulting from the construction of a solar power facility. The second case study involves the Natural Park of Serras D'aire and Candeeiros (PNSAC), using Census data and Geographical Information Systems analysed the impact of conservation legislation on the demographic evolution of communities inside the Park along with the impact of tourism as a developmental strategy.

2. Case study 1: Cape verde – Santo Antão – Monte Trigo

The Cape Verde archipelago located in the Atlantic Ocean, between the parallels 14° 23' and 17° 12' north latitude and the meridians 22° 40' and 25° 22' west of Greenwich

(INE, 2015 – Statistical Yearbook of Cape Verde). Situated approximately at 600 Km West of the African coast, ten islands of volcanic origin, are divided according to the nature of the dominant trade winds, in two groups (Figure 1), namely (i) Barlavento - Windward Islands: Santo Antão, São Vicente, São Nicolau, Santa Luzia Sal and Boavista; and (ii) Sotavento - Leeward Islands: Maio, Fogo, Brava and Santiago (Santos, 2007).

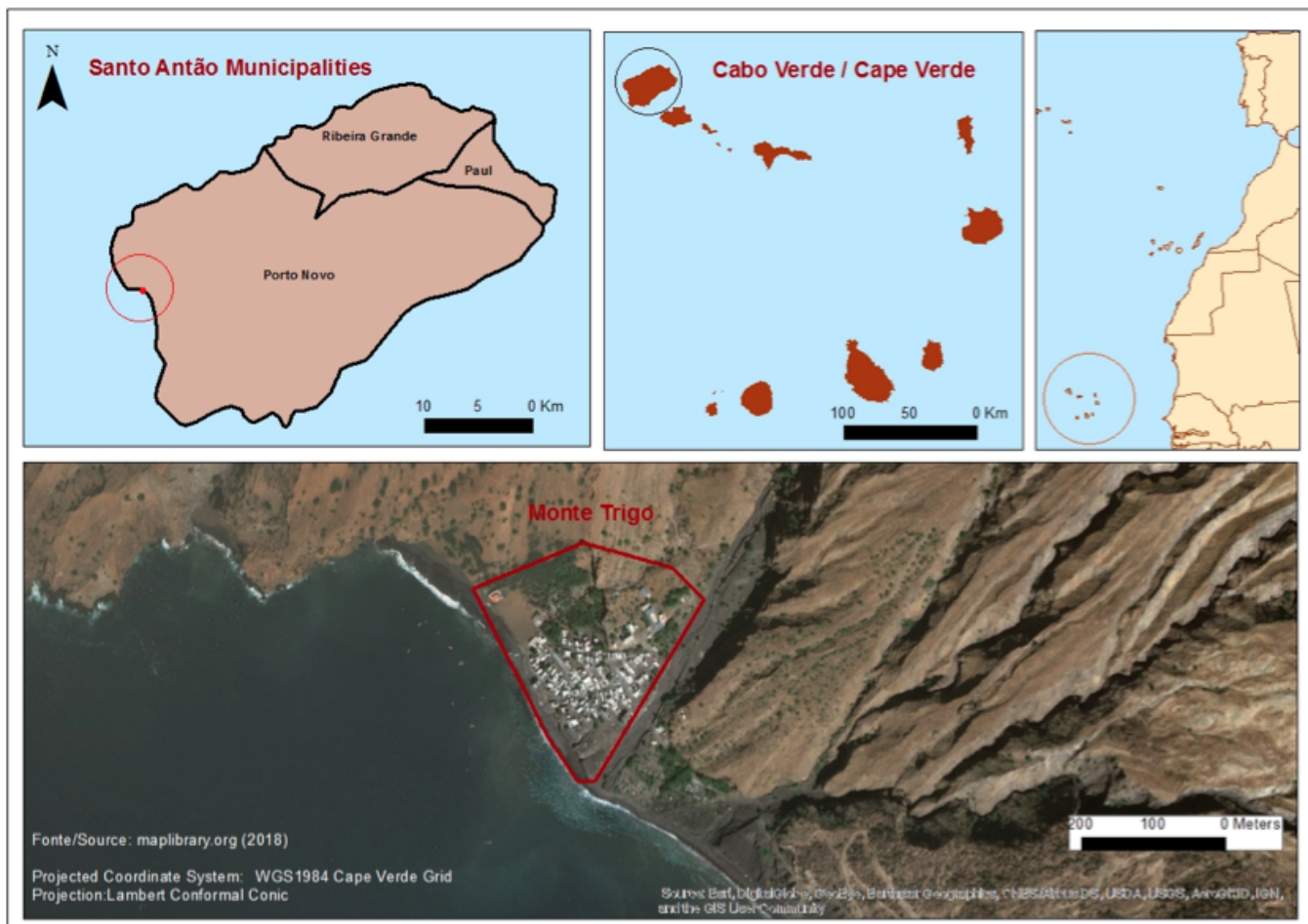


Figure 1. Geographical location of Cape Verde Archipelago, Santo Antão Island and Monte Trigo community.

For Cape Verde, the World Travel and Tourism Council (WTTC, 2017), states that tourism was responsible for the creation of 35.000 direct jobs in 2016, which represents 15% of the total working age population, and estimates an increase of 9.5% for the year of 2017, reaching an estimated 38,500 jobs. Studies further estimate that in 2027 this number will be 63,000 direct jobs, which represents 22.6% of the total working age population. The total contribution of tourism to GDP (including the broader effects of investment, supply chain and yield-induced impacts), was 72.3 billion of Cape Verde Escudos (ECV) at 2016 (44.5% of GDP) and should grow 8.6% for 78.5 Billion CVE (46.4% of GDP) in 2017 (WTTC, 2017).

According to the National Institute of Statistics of Cape Verde (INE, 2018), the number of tourists raised from 644,429 in 2016 to 716,775, an increase of 11.2%.

The tourism industry has played a prominent role in the economy of Cape Verde in recent years, representing an important source of job creation and it is estimated that this will become further relevant in the near future.

Though tourism is an opportunity, it is also a challenge, particularly for islands such as Cape Verde. The fragile environment with easily degraded ecosystems, can be further impaired as a result of climate change and anthropogenic actions, in addition to the overall negative social and cultural impacts, requires special concerns.

2.1. Characterization of Monte Trigo

The island of Santo Antão is the northernmost point of the archipelago and the westernmost island of the African continent ($17^{\circ}02'40.9''N$ and $5^{\circ}21'39.5''W$). With 779 km^2 , it represents 19.3% of the territory and is the second largest in the archipelago. In geomorphological terms, it is part of the group of mountainous islands, with the Mount Tope da Coroa to be its highest point (1979 m). Administratively it is divided into three municipalities, Ribeira Grande, Paul and Porto Novo (INE, 2015).

For this case study, we centred our research on the village of Monte Trigo. This village belongs to the municipality of Porto Novo, between the latitude $17^{\circ} 01' 16''$ North and longitude $25^{\circ} 19''$ West, 60 km from the city of Porto Novo, the municipality capital. The village is only accessible by sea, through small fishing vessels, or by a tumultuous pedestrian way taking several days. The nearest community is about 2:30h to 3:00h on foot. It holds 274 inhabitants, of which 90 with less than 15 years old, 161 between 15 and 64 years old and 23 more than 65 years old. As far as sex is concern, 152 are male and 122 female, representing 57 households (INE, 2010).

Trade and agriculture have little expression, the local economy depends mainly on artisanal fishing (INDP, 2000a), whose small in-shore fishing fleet consists of 16 vessels, from 1.8 to 7.2 meters in length, mainly driven by out-board engines, of power between 8 and 20 hp. The most used fishing gear is the hand line (DGRM, 2016), and the most frequent captured species are the tuna, demersal fish and small pelagic fish (INDP, 2000b).

The remoteness implies elevated costs of basic needs, such energy supply, where daily 4 hours of electrical power supply, to households alone, were guaranteed by a diesel generator, nowadays Monte Trigo is one of the few worldwide fully renewable energy supplied villages and the first in Cape verde guaranteeing a daily 24 hours solar power system both for households and public lighting. Renewable energy is a process that improves energy security, protects the climate, and encourages economic development (Monteiro & Santos, 2018; OECD, 2016)

2.2. Tourism resources

As one of the most mountainous islands in the archipelago, Santo Antão holds a unique potential for mountain tourism, this particularity, coupled with unique natural and cultural manifestations in the archipelago, such as the traditional festival Cola San Jon, green valleys, sun, sea and beach, gastronomy, biodiversity, 5 protected areas with a wide variety of endemic species, constitute some of the unexploited tourist resources of the island. Despite apparently uninteresting, the simple fact that that Monte Trigo, this remote peripheral village, is one of the few with fully renewable supplied energy, already raised the attention of BBC which is currently recording a documentary.

2.3. Methodology

The current study involved a descriptive and interpretative methodology, consisting of: (i) socio-economic characterization of the community of Monte Trigo; (ii) Survey and processing of data on production and consumption of electricity and calculation of CO2 avoided; (iii) sample size (iv) preparation of the questionnaire and V) application of questionnaires.

Whereas the main objective was a completely different from the current paper some of the questionnaire data was used to analyse the predisposition of the Monte Trigo's population to incorporate tourism as an alternative source of development for the community.

The sample size n and margin of error E were obtained by:

$$x = Z(c/100)^2 r(100-r) \quad n = N x / ((N-1)E^2 + x) \quad E = \text{Sqrt}[(N - n)x/n(N-1)]$$

where N is the population size, r is the fraction of responses of interest, and $Z(c/100)$ is the critical value for the confidence level c (Rea & Parker, 2014).

Results for a sample size of 274 inhabitants, for a confidence level 90% and a 5% margin of error was calculated delivering a necessary 137 questionnaires.

Surveys were carried out between 13 January and 4 February 2018 with a 99.3% response rate, where 143 successful questionnaires were implemented to residents over 18 years old.

2.4. Results

The questionnaire comprised 31 questions concentrated around the impact of the solar power plant, however for this study we will use 4 questions which were related to opportunities and job creation:

Q16- With the construction of the solar power plant, did new income opportunities arise?

Q17- If yes in which areas?

Q18- With the construction of the solar power plant, did new job opportunities arise?

Q20- If yes in which areas?

Results are presented in Table 1, where from the results it is easily perceivable that the community understands the advantages of having 24h electricity (Q16 – 39.1%), and sees Tourism as a development opportunity, having the highest scores for questions 17 and 20 with 61.5% and 27% respectively for opportunities and job creation.

1. Table 1. Questionnaire results to the Monte Trigo community.

Question	Answers	Percentage
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Q16	Yes - 54 No – 36 Don't Know - 48	39.1% 26.1% 34.8%
Q17	Commerce – 29 Tourism – 32 Fishing – 23 Other - 0	55.8% 61.5% 44.2% 0%
Q18	Yes - 72 No – 22 Don't Know - 43	52.6% 16.1% 31.4%
Q20 (open answer)	Tourism – 27 Commerce and services – 25 Fishing – 22 Electricity related – 21 Construction - 5	27% 25% 22% 21% 5%

The development of tourism at Monte Trigo requires a delicate well drawn model to maintain the sustainability. The construction of the solar power plant benefited both the development (24h electrical supply) and the sustainability reducing the need to exploit natural resources such as wood for heating or reduction in emissions from the previous diesel generator (Monteiro & Santos, 2018). From the results (Table 1) the population is eager for development, this is a key moment that requires an adequate model to prevent uncontrolled destruction of the recently acquired sustainability status.

2.5. Actions to be developed/proposed

2.5.1. Opportunities and threats

Tourism constitutes an opportunity for employment and economic growth for the residents and the overall community of Monte Trigo, however tourists must be predisposed to learning through cultural exchange in order to respect local resources.

Queiroz, Guerreiro and Ventura (2014) claim that "tourism in small islands is highly dependent on the quality of the marine and coastal environment [...]" And for the World Tourism Organization (WTO, 2014), the development of tourism in islands should be oriented to fulfil plans that take full account of their physical and spatial capacity, considering the limitation of resources, especially water, coastline, biodiversity and energy.

In a remote and isolated village like Monte Trigo, and for that matter the island of Santo Antão, the precautions are directly correlated to threats, of which we emphasize: The loss of biodiversity as the ecological balance is extremely delicate, the scarce freshwater resources and the loss of culture and traditions through the acculturation of the local population.

2.5.2. Proposals for the tourism model preparation

Component 1 – Creation and promotion of the Monte Trigo brand.

The classification and certification of services, equipment and merchandize products to ensure the quality and competitiveness of the community as a tourist destination. This brand should be promoted externally and internally, with advertising campaigns, also encouraging domestic tourism.

Component 2-Management

Creation of a body responsible for planning and managing tourism in the community. It aims to allow the coordination and interaction between public institutions, public and private productive sector, community organizations and media, converging efforts and resources involved in maximizing results, aiming at Environmental, social and cultural sustainability. The involvement of the local population in the decision-making process, that is, in the governance of tourism in the community is a keystone action. Furthermore, the need to implement adequate

management strategies involving both the creation of Marine and terrestrial protected areas is urgent in order to deter predatory tourism which will not benefit the locals, whereas creating exceptions to locals guaranteeing they will continue their livelihoods.

Component 3-Host, infrastructure and security

According to INE (2015), in 2014 visited the island 22,370 tourists. The overwhelming majority from France (10,325), followed by Germany (2,595), Belgium and Holland (986) and Portugal (546). With 68 tourist accommodation establishments in 2017, which corresponds to 24.7% of the total existing in the archipelago, it is the island which observed the largest increase in the number (26) of these establishments in the country compared to 2016 (INE, 2018). This issue requires an urgent analysis of the islands carrying capacity and a concerted governmental effort with the travel agents to guarantee that numbers are respected.

Component 4 – Training and research:

Training of professionals, in mastering foreign languages, and on the promotion of culture, will considerably improve the quality of the service. Create a platform of training institutions to give visibility to the training excellence and promote the creation of a tourism research network, where the design of an analysis model such as DPSIR model (Drivers, Pressures, State, Impacts, Responses) is urgent.

Component 5-Investment:

Creation of an investment fund for tourism, with the participation of the Municipalities of the island together with private entrepreneurs. This fund should, above all, finance initiatives by small family or individual businesses allowing them to improve the quality of their products and to support thematic events that promote the appreciation and marketing of this tourist destination.

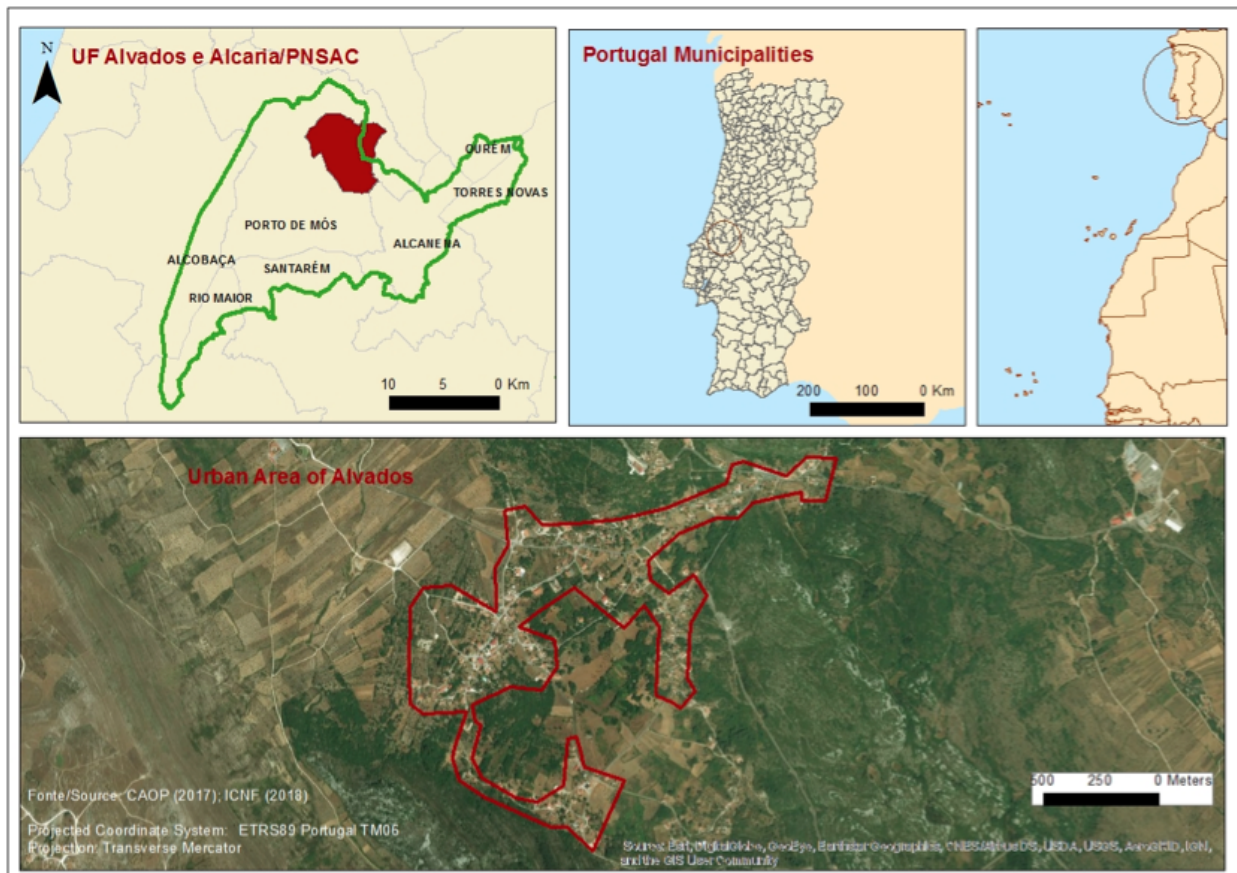


Figure 2. Geographical location of Serras D'Aire and Candeeiros, the Natural Park (PNSAC) and the Alvados Village.

3. Case study 2: Portugal – Serras D'Aire e Candeeiros – Alvados

Serras Aire and Candeeiros are a mountainous limestone massif located in the centre of Portugal (Figure 2) separating both the North from the South and forming a mountainous barrier orientated SW – NE that separates the littoral from the interior. The Nature Park of Serras D'Aire and Candeeiros (PNSAC) occupies 38.900 ha, with a characteristic bushy sparse vegetation (garrigue) and red fertile soils (Terra Rossa). The most important limestone deposits found in Portugal holds unique Karst characteristics such as Dolinas, caves, cliffs and rocky outcrops, the richest bat diversity and unique cases of speciation. The Natural Park was classified by Governmental Decree - nº 118/79, 4th of May 1979.

The noticeable presence of the rock extraction industry that along with the textile industry, tanneries and livestock helped to establish a population that could not be justified by the inhospitable terrain (ICNF, 2018).

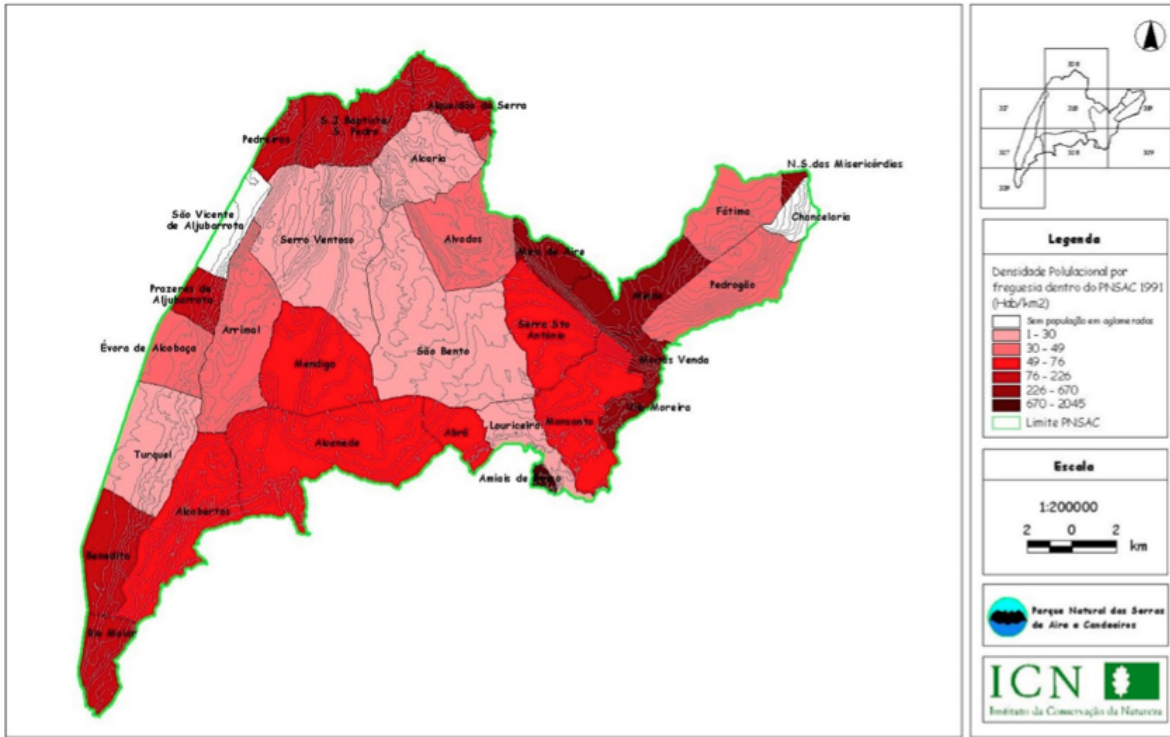


Figure 3. Population density for the areas within the Nature Park (PNSAC) 1991.

When comparing both maps, it is clearly understood that a higher population density is observed in the boundaries of the Protected Area. This data alone does not allow us to correlate the loss of interior population, factors such as economy or even natural resources decline could easily explain such trend.

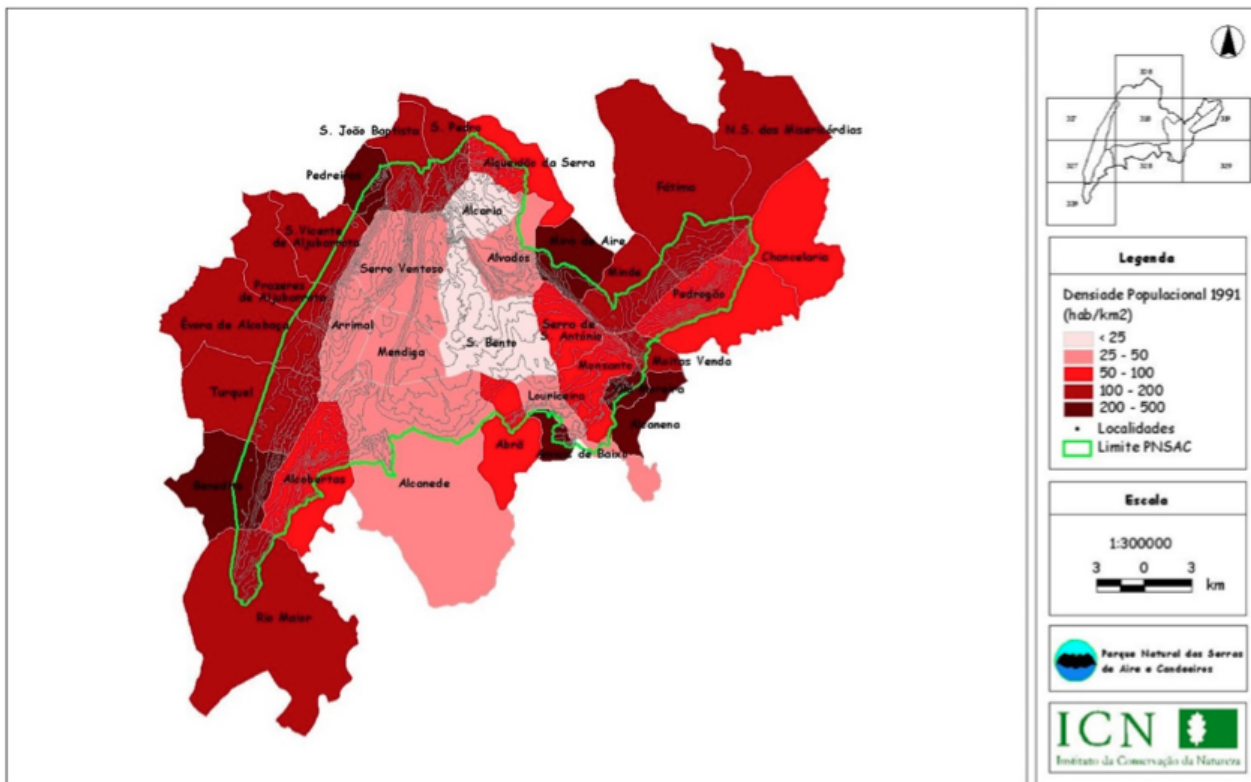


Figure 4. Population density for the municipalities in the geographical influence of the Nature Park (PNSAC) 1991.

3.1. Characterization of the Alvados Municipality

Alvados village has 400 habitants, mostly elderly population. The strong cultural traditions, still in place, invoke past livelihoods. Where once a strong economic activity base on knitted fabrics industry (currently disappearing) was, only remain the people and the stories of what was once a thriving industry. Agriculture and livestock are still the

main sources of income.

3.2. Nature Park demographic analysis

As predicted by literature by 2030 in European, urban areas and residential developments will expand around most protected areas (Brambilla and Ronchi, 2016). As this is in many ways understood by the need for natural resources, we questioned whether this fact could be attributed to restrictions imposed by the protected areas management system and if this was the case for the PNSAC area. Using data from the census 1991, 12 years after the classification as a Protected Area and GIS we analysed the population density inside the protected area (Figure 3) and in the municipalities in the geographical area of influence of PNSAC (Figure 4).

Exploring data even further, the active population variation between 1981 and 1991 was analyzed (Figure 5), confirming the previous suspicion of a tendential decline of population inside the protected area, which may be attributed to restrictions in the exploration of natural resources (i.e. mining and rock extraction).

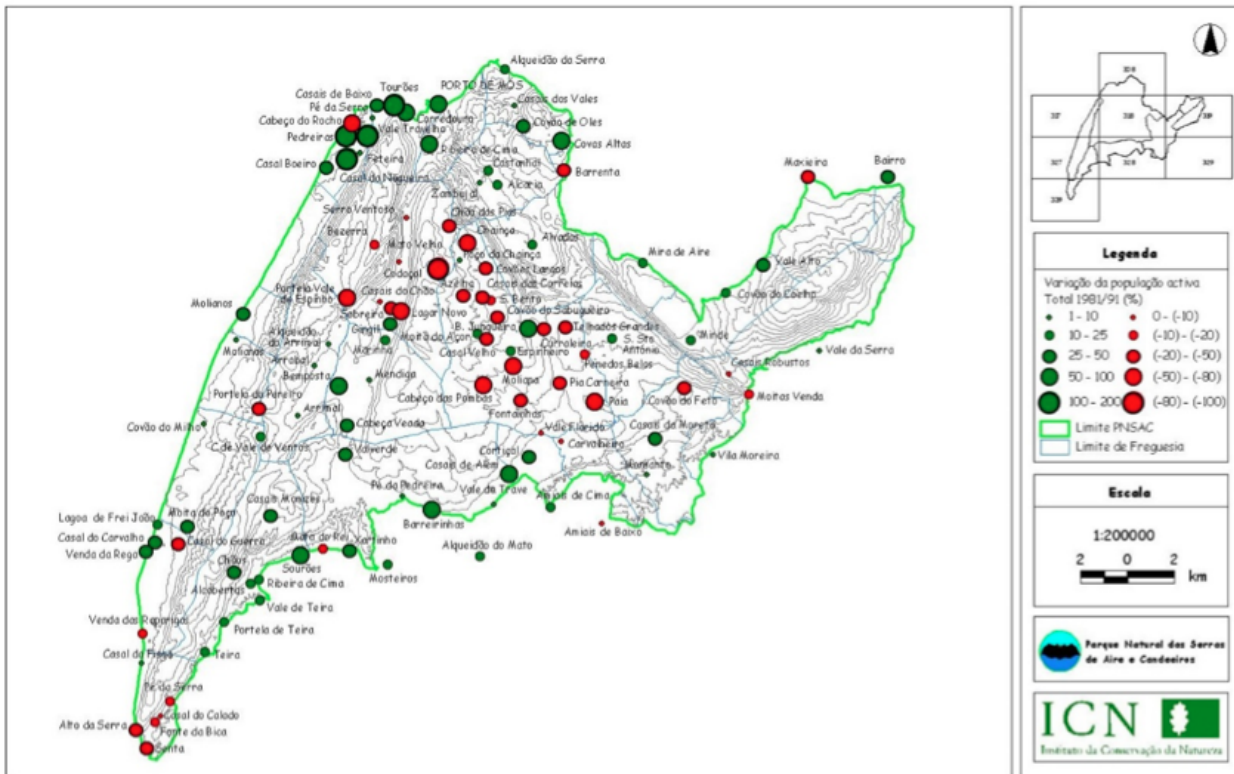


Figure 5. Active Population variation between 1981 and 1991 by percentage.

Any typology of protected area will have a management framework, for the PNSAC the management is Public (managed by the state), which will forcefully implement a rigid set of restrictions.

3.3. The Alvados example

The state declares places where people live, farm, hunt, gather, worship, and remember, to be conservation territories that must be protected from their former inhabitants. This old-fashioned form of population and territorial control creates conflicts between population and protected area managers which are mere governmental agents. The protected area status restrictions imposed on the limits of the PNSAC may have contributed to a lower population density, however with the worldwide boom of Nature Tourism, new opportunities of legal urban rehabilitation of housing towards the tourism market are a reality (Figure 6). Alvados holds today 6 privately owned tourism related business which together represent 130 beds, meaning a carrying capacity of 12.000 tourists per year, and an average occupation rate of 25%.

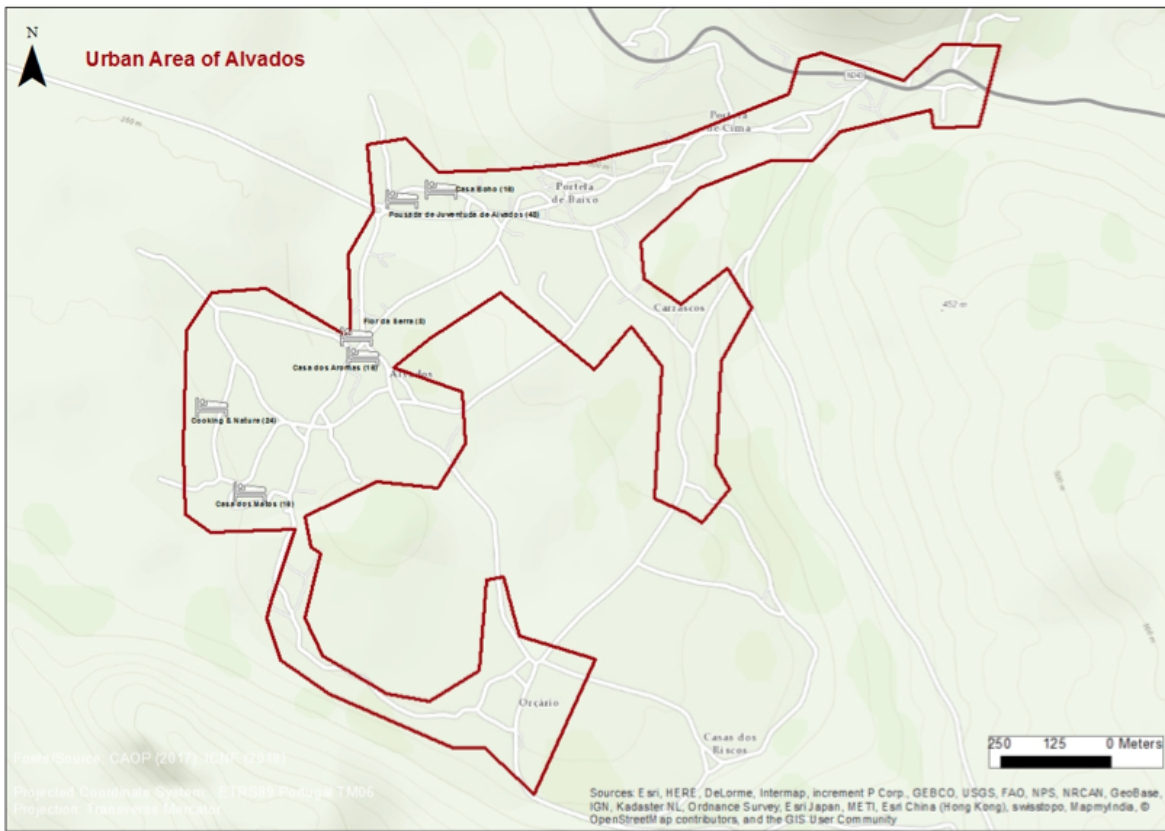


Figure 6. Urban limit for the Alvados village.

The tourism opportunities do not resume to tourism nights, in fact Non-Governmental Association (NGO) “MOVE Comunidades” aids the local economy by marketing local products in their shop, helps farmers to certify their products and promotes environmental and cultural activities. Another case is the use of Adventure as a service supplied to tourists, the Adventure – “Associação Trilho do Castelejo” offers a series of activities through the Protected area in cooperation with all the stakeholders.

4. Discussion

The case studies presented may at first glance appear to belong to worlds apart, though this was the purpose, they are in fact two different sides of the same table. Cape verde’s Monte Trigo and Alvados share a similar demographic dimension and a similar peripheral status. Alvados is the example of what could go wrong and how it can be repaired, whereas Monte Trigo is a blank canvas with the correct pastels to produce a masterpiece. This line of thinking underlies the design of a variety of methodologies, from schemes for economic valuation and commodification of resources, like carbon offsets to commodity certification or payments for ecosystem services to build a model for the sustainable implementation of Tourism in Monte Trigo, thus contributing to natural resources conservation and the development of the community, conferring a minimum impact.

One of Tourism’s approaches to Protected areas is the participatory interventions, which rest on the proposal that residents and other stakeholders will be better motivated to conserve natural resources if there are economic rewards. Furthermore, residents should feel the sense of property when referring to the Protected area, for management this would represent that each inhabitant would be a Park ranger monitoring the wellbeing of the Natural Park.

Though Tourism is on the rise in some regions, others observe a decline, the ephemeral characteristics of Tourism lead us to caution. Neoliberalisation of Tourism may be an extreme, however the transformation from a fully publicly managed Park to a shared governance seems to be a natural transformation, however this transformation hinges on two elements: selective commodification and state mediation.

Monte Trigo offers an excellent opportunity to combine the creation of a protected area with the needs of the population and the local economy. For Monte Trigo community, the establishment of a park creates opportunities for the development and protection of cultural and social values, representing the most powerful tool to exploit tourism as part of an integrated development strategy.

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