

# Comparative analysis of managing beaches as a recreational resource in Croatia and Portugal

---

Kovačić, Mirjana; Silveira, Luis; Kerčević, Srđan

Source / Izvornik: **Pomorstvo**, 2020, 34, 405 - 416

Journal article, Published version

Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

<https://doi.org/10.31217/p.34.2.21>

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:187:106682>

Rights / Prava: [In copyright](#) / [Zaštićeno autorskim pravom](#).

Download date / Datum preuzimanja: **2024-07-08**



**Sveučilište u Rijeci, Pomorski fakultet**  
University of Rijeka, Faculty of Maritime Studies

Repository / Repozitorij:

[Repository of the University of Rijeka, Faculty of Maritime Studies - FMSRI Repository](#)



Multidisciplinary  
SCIENTIFIC JOURNAL  
OF MARITIME RESEARCH



University of Rijeka  
FACULTY OF MARITIME STUDIES

Multidisciplinarni  
znanstveni časopis  
POMORSTVO

<https://doi.org/10.31217/p.34.2.21>

# Comparative analysis of managing beaches as a recreational resource in Croatia and Portugal

Mirjana Kovačić<sup>1</sup>, Luís Silveira<sup>2</sup>, Srđan Kerčević<sup>3</sup>

<sup>1</sup> University of Rijeka, Faculty of Maritime Studies, Studentska 2, 51000 Rijeka, Croatia, e-mail: mirjana051@gmail.com

<sup>2</sup> University of Coimbra, CEGOT, Faculty of Arts and Humanities, Largo da Porta Férrea Coimbra, Portugal, e-mail: luis.silveira@uc.pt

<sup>3</sup> University of Zagreb, Faculty of Humanities and Social Sciences, Ivana Lučića 3, 10000 Zagreb, Croatia, e-mail: srkercevic@gmail.com

## ABSTRACT

Beaches are natural resources that substantially enrich the tourist offer. They are an extremely valuable resource, with economic, recreational, and health significance. Beaches are a place for socializing, sports and enjoying (sun, sea, and sand tourism product). Because of their different roles, especially urban and hotels/resorts beaches, they are exposed to various and numerous negative impacts caused by natural changes and human activity. Beaches should not be just an object for commercial use, as their meaning for people is much wider. This research focuses on managing and protecting beaches that require social responsibility due to their determining role in the national economies. The guidelines for effective management primarily refer the necessity of developing intellectual resources, the coordination between institutions, ensuring pro-activity and being holistic oriented in managing beaches. Scientists and professionals need to recognize their importance and take action to preserve this valuable asset for future generations. In that sense, the purpose of this research is to analyse the legal regulation and to highlight the differences and similarities between two countries, Croatia and Portugal, which due to their physical geography, climate and tourism activity, are based mainly on beach-related activities.

## ARTICLE INFO

Review article  
Received 17 November 2020  
Accepted 16 December 2020

### Key words:

Beaches  
Recreational resource  
Impacts  
Managing  
Croatia  
Portugal

## 1 Introduction

People have always given advantages to the coastal area due to its numerous possibilities. The arable land has attracted them by the sea, the richness of maritime resources and the possibility of access to the international market. The coastal area is a key to many countries' economies, where many social and economic activities are concentrated with their specific impact. Tourism as an economic branch also has a specific position. The importance, but also the problems of the coastal area will certainly increase in the future, due to the increasing number of people who annually look for these areas to live, work and spend their leisure time.

Croatia is a country that has managed to preserve its resources and their value, and one of these high value resources are the beaches, which are much discussed, and only recently exploited in a systematic way. Despite this, the fact is that Croatia does not have complete data on

beaches (beach cadastre), but research conducted so far by scientific and other institutions has allowed beaches in Croatia to be accepted as a resource requiring special care.

The beaches in Portugal, apart from being resources that throughout the history of the country have occupied a very important role, continue to play a major role in tourism, with Sea, Sun and Sand tourism being one of the main tourist products, if not the main one. In addition, most of the Portuguese population lives on the coastline, showing a necessary attention to the beaches, specifically their sustainability and management.

The objective of the research is to establish positive and negative experiences of beach management and protection. The aim of the research is to analyse beaches, provide a critical view and define a sustainable management model. In this respect, this research contributes to the development of deliberating the importance of the beach as a recreational resource. The methodology comprises a

quantitative and theoretically empirical analysis through the use of statistics, reports and national legislation.

## 2 Theoretical background

The coastal area is a system of multiple resources. It provides space, living and non-living resources for human activities and determines the natural and artificially created environment. Simultaneously, the coastal area is a system of many users and is used as a means of subsistence (water and food, especially in areas where rivers and their mouths are present), for economic activities (space, living and non-living resources, energy) and for recreation (beaches and water areas). Among many activities concentrated in coastal areas, tourism is certainly the most influential activity due to the constantly growing tourism demand and the accompanying tourism supply.

Tourists are becoming more demanding, especially in anticipation of content and travel experiences, which include aspects such as cultural authenticity, contact with local communities, and learning about flora, fauna, special ecosystems and nature in general. Such trends place tourism in a strategic position to contribute to or otherwise undermine the sustainability of natural areas, in particular protected areas and the development potential of different communities in their environment. The coastal area is one of the most important economic and natural resources in Croatia and Portugal. It is an area where dynamic and interdependent natural processes occur, driven by the interaction of oceans, seas and land, and affected by development pressures, among them economic development. The possible negative impacts of such pressures have often unintended consequences on ecosystems, which is the reason why development should be limited to some extent, or shifted towards a sustainable blue and/or regenerative tourism process.

The coast, and then the beaches as an integral part, is continuously exposed to natural action, but even more to human action. Settlement, industrialisation, apartmentization and tourist development, as well as (illegal) devastation in the form of embankment, concreting, etc., are just some of the forms of pressure on the coast. According to the authors (Defeo et al., 2009), the pressures can be seen as:

- recreation, off-road vehicle crossings, trampling, sunbathing, swimming, horseback riding, camping (on the beach and dunes);
- various pollutants, from sewage and rainwater, waste, eutrophication, thermal pollution, oil and other chemicals;
- coastal development, construction (houses, infrastructure, roads, etc.) and construction (dams, fences, walls, embankments, breakwaters, etc.);
- environmentally friendly, inadequate cleaning, feeding, backfilling and fencing;
- exploitation of resources, fishing, excavation, etc.;
- climate change, sea level rise.

From the south (Algarve region) to the north of mainland Portugal and including also the Azores and Madeira archipelagos, the vast majority of the population lives by the sea. Consequently, it is also in the coastal strip where the major tourist flows are concentrated. Associated to these situations is the fact that Portugal is a territory bordering the Atlantic Ocean and therefore at the mercy of natural dynamics such as coastal erosion, among others. With climate change currently underway, the challenges for the sustainability of these coastal areas become even more challenging, making it necessary to provide increasingly rapid solutions adapted to the various scenarios.

According to Williams and Micallef, (2009) a beach can be defined as an accumulation of unconsolidated material (e.g. sand, gravel, clay or a mixture thereof) that extends from the land edge of the beach, which may be a dune slope or breakwater, to sea and ocean depths with no significant sediment movements. Beach types can be defined taking into account a wide range of physical, natural and anthropogenic determinants, which may include, inter alia, marine physics, phytogenic sediment composition, colour, shape, stability, degree of conservation of natural habitats and species, degree of naturalness, use of beaches surroundings, etc.

Beaches should also be understood as multidimensional natural systems that are incorporated into larger, coastal systems and that are complex from the interactions of natural, socio-cultural and management systems (Marković et al., 2010). According to Anić (1998), a beach is an area by the sea, river or lake arranged for swimming. Beaches along rivers and lakes differ from sea and ocean beaches primarily in ownership regime while the beaches by the sea and oceans are most often determined as maritime good. As a common good, the maritime domain according to Kundih (2005) is a domain outside of commercial use (*res extra commercium*). Beaches are also defined as a complex system of consolidation of lands and sea or ocean) that are closely linked to specific social and economic circumstances (Simm, et al., 1995), so it is a highly valuable resource that is threatened by various potentially harmful influences, as a result of many, natural and other, especially human, actions.

According to economist Daly, those actions can cause negative externalities that erode the public good, in terms of the growth of external costs in the environment, caused by depletion of raw materials and environmental pollution (Pravdić, 2008). Moreover, Baldwin (2007) states that these effects are defined as *illth*, referring to the phenomena that destroy or diminish various welfare forms.

Beaches have multiple functions, such as natural, social, economic and recreational. Beaches are a resource, and a resource is considered as "... medium, opportunities, stocks, reserves, source, natural resources" (Anić in Drljača, 2004: 36). According to Perinić Lewis and Adžija (2015) the beach is a low flat shore made of sand or pebbles, suitable for swimming (in the sea, river, lake); syn-

onymous also with sea bathing. Sandy beaches and dunes are different forms of the same material that together form an extremely flexible and efficient system, specially developed to absorb the force of the sea. This combination is one of the best forms of coastal protection due to their natural ability to act in accordance with coastal processes, producing or storing coastal sediment. However, this was not always recognized – they were destroyed in many ways: by building houses, golf courses, military facilities, etc. According to Defeo, sandy beaches are particularly vulnerable to human impact due to recreation, cleaning, urban development, pollution and exploitation (Defeo et al., in Martinez, Lercari, Ruiz-Delgado, Sanchez-Moyano, Jimenez-Rodriguez, Perez-Hurtado, Garcia-Garcia, 2014). Exploring two Spanish beaches, Martinez and associates proposed the Index of anthropogenic impact on beaches – FCI (Finn Cycling Index), concluding that, despite the trophic functions of both urban and wild beaches, the latter are more stable and have greater regeneration capacity (ibid).

According to the authors (Corbin in Perinić Lewis, Adžija, 2015), beaches had a utilitarian function until the 18<sup>th</sup> century, and in the 19<sup>th</sup> century they have also started to acquire a tourist role. Human interaction with the beach is registered in the past as the only access to the sea and the ocean and it was mainly used for fishing, commerce, and later for transport. The expansion of the road infrastructure and other transport networks resulted in a large and relatively sharp increase in the construction of residential buildings along the coast, which was visibly manifested by mass tourism in the early 1950s. With the introduction of the concept of integrated coastal area management in California in 1972, beaches are increasingly seen as a high value socio-economic and environmental resource.

Theoretical approaches to observing the social role of beaches are also different. The mechanistic approach dominant in the 17<sup>th</sup> and 18<sup>th</sup> centuries defines the beach as a bathing mechanism designed to connect society and nature, allowing individuals to use nature and, ultimately, to use beaches for profit (Russell in Luttenberger, 2014). This comprehension mainly focuses on human as the centre of nature, its benefits and economic gain. The relationship between nature and human beings is particularly visible in terms of the use of beaches, with the natural resource gaining a completely new role and meaning through human activity (Baldwin, 2007). The beach as a passive natural resource becomes part of the production process which by appropriation becomes subordinated to human needs (Marx in Baldwin, 2007).

Due to industrialization and better transport connections in the middle of the 19<sup>th</sup> century, *medicalized beach* was replaced by *pleasure beach* (Shields in Perinić Lewis, Adžija, 2015), and therefore it became a discursively and socially constructed type of nature (Obrador Pons in Perinić Lewis, Adžija, 2015). Beaches also represent the transformation of one form of good into another, which

Bourdieu calls *trans-substantiation*, that is, the exchange of one form of accumulated capital (power, knowledge, status, etc.) into another (Bourdieu in Baldwin, 2007). However, the transformation itself is not necessarily the goal, but can be viewed as a kind of interaction channel in which different cultures and lifestyles meet and interact with each other (Monterrubio in Rudan; Krstinić Nižić, 2018), thus creating a new cultural value, not only for tourists, but also locals, which is thus undergoing a gradual transformation. Also, Fiske (Fiske in Perinić Lewis, Adžija, 2015), points out that the beach is an anomalous category, *sui generis*, between land and sea, nature and culture, which is neither, but has the characteristics of both. According to Preston-Whyte (Preston-Whyte in Perinić Lewis, Adžija, 2015), the beach as a material space is an area of insecurity, and as a cultural space, it is a border area that allows diversity and hybridity.

Beaches are an important economic and recreational resource; they are often carriers of global tourism and are generally considered to be a major factor in the tourism market. In the world, beaches are a significant source of income and in recent years in Croatia as well as in Portugal, there is a growing interest in the possibility of using their recreational and economic potential. Beaches bring a lot of income from various activities, renting beach equipment, sports and recreation facilities, through catering services, entrance fees, and even the payment of parking slots near the beaches.

### 3 Materials and methods

As the article focuses on a holistic approach to beach management, the emphasis is on determining the natural values/recreational potential of the beach and the appropriate reception capacity. The techniques for assessing natural values take into account a number of elements, one of which is being assessed is beach cleanliness, to be analysed according to the EA/NALG (2000) protocol and seven categories of waste. Sea and ocean quality are analysed on the basis of the results of national monitoring of sea and ocean quality for bathing. However, only some beaches can be assessed in this way, for the others (mostly rural and remote beaches) the so-called visual assessment is used.

The environment of the beach is assessed on the basis of data on the density of inhabitants near the beach, cultural/archaeological sites, the extent of construction and agricultural use, access to the beach, and employment opportunities in beach related jobs. The intensity of beach use and landfill forms are also taken into account. The data are divided into two basic groups: natural values and recreational potential of the beach. This presentation allows the spatial determination of beaches into three basic groups, namely beaches with pronounced natural values, beaches with pronounced recreational potentials and beaches with transient forms of greater and lesser conflict between natural values and recreational potentials.

After determining the recreational potential of the beach, it is possible to estimate the reception capacity defined by the World Tourism Organisation as “the maximum number of people who can visit a tourist site without destroying its physical, economic and socio-cultural environment and unacceptably reducing the quality of visitor satisfaction” (UNEP/MAP/PAP, 1997). It is therefore possible to differentiate between four forms of reception capacity:

- physical reception capacity – the threshold for the number of people above which the natural and cultural heritage of a destination is being damaged;
- ecological reception capacity – the number of people that the beach ecosystem can support so that the extinction rate of species does not exceed their birth rate;
- social reception capacity – the concentration of people above which beach users begin to feel uncomfortable due to overcrowding;
- institutional reception capacity – maximum presence that can be properly managed in an area.

The importance of determining acceptable beach capacity has been recognised by many authors (Da Silva, 2002; Da Silva et al., 2007; Zacarias, 2011), stating that this is a complex task for beach management. The reception capacity is an important determinant of the preservation of beaches as a resource with all its functions. For the local population, the reception capacity has a special meaning, which can face a nuisance and a pressure when it is exceeded because of tourists.

Interest in economic activities on certain beaches is continuously growing. The reasons are related to the income that beach service providers generate. Many beaches offer various amenities (umbrellas and deck chairs) as well as recreational and sports, catering and shopping facilities, so congestion occurs, which reduces the attractiveness. A special problem is related to the car parks in the vicinity, which additionally order the recreational and tourist attractiveness of the same beaches. It should be noted that there are beaches that are exactly the opposite, due to the variety of facilities offered, but at the same time there are problems with their cleanliness, safety and other issues. The overcapacity of the beach area raises several conflicting issues that beach management should take special care of:

- the protection of the coastal area, i.e., the management of the coastal area;
- beach carrying capacity;
- balance between the requirements of free access to beaches for all on equal terms and the requirements for the closure of beach areas;
- balance between the number of facilities offered and the free beach area.

The abovementioned factors open other questions about whether should:

- Beaches close when it comes to resorts, nudist beaches and camping beaches?

- The beach be closed for the needs of hotels with pets and more stars?
- Open beaches and landscaped areas be charged?

The fact is that Mediterranean countries, on the basis of legal solutions, are trying to protect the coastline and consequently the beaches. The prevailing view for beaches is that they should be accessible to all, therefore open. However, there are detours which apply mainly to resorts and beaches for nudists, and more recently to some beaches located in the camp. The domicile population usually has free entrance, but some larger camp charge an entrance fee to the beach.

Beaches are primarily a place for rest, swimming and leisure, but in addition to the social and recreational role, beaches can be in economic use. This is possible through a holistic approach to beach managing.

## 4 Analysis of beaches in Croatia

For Croatian tourism, the beaches and the sea are of immeasurable importance, both economically and socio-ecologically. At the same time, the beaches are at the centre of tourists' interests and are one of Croatia's most exploited tourist resources.

### 4.1 Natural features of the Croatian coastal area

The sea and the coastal area are the most important natural-geographical elements for the development of tourism, with the appearance of the Adriatic coast and islands conditioned by the long-term interaction of men and nature. Although the Croatian Adriatic area forms a unique entirety, when observed from the morphological aspect (climatic, social and similar), several regional units can be distinguished. These are Istria and Kvarner, then Dalmatia or Southern Croatia. There are 1,246 islands, islets and reefs in the Croatian Adriatic (Duplančić Leder et al., 2000). With a huge number of islands, the Croatian coast is one of the most indented coastlines, and after the Greek coast, it is the most indented coast of the Mediterranean (the indentation coefficient of the Croatian part of the Adriatic coast is very high 11.1).

According to the total length of coasts (island and mainland) of 5835.3 km (Duplančić Leder et al., 2004), Croatia is ahead of all the countries in the Adriatic (74%). On the 79 large islands with an area of over 1 km<sup>2</sup>, 66 are inhabited, 525 are islets with an area of 0.01 to 1 km<sup>2</sup>, and 642 reefs and cliffs have a total area of less than 0.01 km<sup>2</sup> (Duplančić Leder et al., 2004).

The Croatian coast is mostly pebble and rocky, but one of the cleanest in Europe, with more than a hundred beaches that have earned blue flag status for their exceptional cleanliness of coast and sea. The reason for this is mainly because Croatian beaches are generally covered with rocks, water meadows or gravel. Nevertheless, Croatia has several beautiful sandy beaches. In that aspect,

it is worth to highlight the sandy island of Susak, a small isolated island in the northern Adriatic. But the ultimate number of beaches in Croatia is still unknown. It can be assumed that it counts around 2000 beaches, taking into account the area of seven Adriatic counties in Croatia.

Systematic research on beaches to determine their actual or approximate number has not been conducted. Various individual researches, studies and projects have been carried out which indicate the need for unification. In Croatia, there is still no comprehensive beach management programme including a comprehensive assessment of the natural values and recreational potentials of the classification to be respected on the beach in order to preserve and improve these potentials. There are initiatives to assess the state of biodiversity of beach habitats as well as initiatives to assess recreational and safety aspects of the beach area.

The beach project thematizing “1000 Croatian beaches (2014)” is the first systematic beach research in Croatia. The aim of the research was to enable the different stakeholders to value and holistically address the management of beaches and determine their actual or approximate number. The research has resulted in individual research at regional level – municipalities and the development of regional programmes for the arrangement and managing of beaches.

#### **4.2 Legislative determinants of beaches in Croatia and forms of governance**

Forms of economic use of beaches in Croatia are based on legal solutions that include the granting of a concession or concession permit. Obtaining a concession permit follows a simple procedure, but the procedure for granting a concession is complicated and time-consuming. Frequent law amendments and other subordinated decisions lead to legal uncertainty, which should certainly be avoided in the future also by simplifying the procedures. Beach management in Croatia can be viewed from the aspect of marine protection, i.e. the ecological aspect and the aspect of jurisdiction that is in accordance with the Law on Maritime Property and Seaports (OG 158/03, 100/04, 141/06, 38/09, 123/11, 56/16, 98/19), and the Law on Concessions (OG 69/17, 107/20) given to the regional and local administration level. The Law on Physical Planning (OG 153/13, 65/17, 114/18, 39/19) does not consider beaches in the context of their content, but observes beaches as a possible space for construction, so it is stated that outside the construction area, construction can be planned between other areas of economic use of maritime property and beach management. Furthermore, interventions in the restricted area are interpreted in more detail, where buildings intended for the exploitation of seabed sand for the purpose of arranging beaches in the construction area cannot be planned.

Beach management in Croatia is subsidiary delegated to the regional and local governments, through the grant-

ing of concessions and concession permits. In this way, beach management has the function of maintaining or improving the beach as a recreational resource, as an instrument of coast protection and a very important function of beach management. In this context, good beach management as a continuous process must ensure the protection of the beach, and the maintenance of the beach within the available financial resources. In recent years, the aspiration and readiness of the local administration to take over the competence in the management of beaches through the institute of concessions in its administrative area is visible, and this has especially come to life in the County of Istria. In this way, the local administration has an additional motive to directly manage the development of beach resources in accordance with the existing spatial plans.

A concession is defined as a right by which a part of a maritime good is partially or completely excluded from general use and given for special use or economic exploitation to legal and natural persons registered to perform trades. When contracting a concession for a beach, the special obligations of the concessionaire relate to the maintenance of the existing communal infrastructure at the beach location, organization of rescue service, navigation safety and safety of swimmers ensured according to positive regulations, installation of information boards with the name of the beach and possibly access for people with disabilities, fencing the sea border with buoys at sea, maintaining daily cleanliness and garbage collection, installation of signalization and changing cabins, and maintenance of children’s playgrounds and sandpits.

At the local level, management is carried out on the basis of maritime domain management plans issued by cities/municipalities, by granting concession permits or being managed through utility companies. Concession permits are issued by the Council for the granting of a concession permit which operates with cities and municipalities in the manner and according to the procedure prescribed by the Decree on the procedure for granting a concession permit on a maritime domain. The activities that can be performed derive from the Unified List of Activities on the Maritime Domain, and relate to renting, catering and trade, commercial and recreational facilities, transport of passengers and cargo, charter, technical work, training (swimming, rowing and diving) and organization of excursions.

According to the authors (Kovačić et al., 2014), the valorisation of the beach as a resource and the beach environment in Croatia has not yet been systematically resolved. At the state level, a database has been formed that includes the typology of beaches, but only beaches where water sampling is performed are included here. The regional governments approach this problem differently. For instance, Primorje-Gorski Kotar County has a beach cadastre, which provides exact information on the type, length and structure of the beach, and accommodation within a specific location. In order to valorise the maritime domain, the Split-Dalmatia County has developed a model for the valuation of the maritime domain, which contains an

overview of activities, ecological and economic valorisation and criteria for the valuation of the maritime domain. The application of the model helps in making decisions regarding the management of maritime assets, especially beaches. Most counties in Croatia today use the technique of data processing using a geographic information system, which is becoming more common among most users, especially decision makers, since it presents sometimes very abstract data in a simple and acceptable way. But here the problem of professional and intellectual capacity and its competencies may arise. It should also be emphasized that there is no single database, but it is a matter of partial solutions which ultimately hinders the economic use of beaches as a resource, especially its protection.

Considering beaches in the context of their use, the Regulation on the procedure for granting concessions on maritime property (OG 23/04, 101/04, 39/06, 63/08, 125/10, 83/12, 10/17) defines as:

- arranged public beaches – serve a large number of tourist facilities and citizens;
- arranged special beaches – form a technical-technological unit of one accommodation facility;
- natural beaches – no spatial interventions have been carried out in terms of regulations governing spatial planning and construction and which may not be fenced off from the land.

It should be emphasized that pursuant to the Regulation, regulated public and regulated special beaches when subject to concession may be in the status of free access, i.e. the beach can be fenced but not charged, or the beach can be fenced and toll (e.g. beaches of some hotels on the island of Lošinj, some nudist beach camps, etc.). The Law provides the possibility of restricting and charging entrances exclusively to landscaped beaches. Croatian regulations also consider rocky shores and artificial beach areas to be regulated as types of beaches. However, geologically observed, only sandy and pebble coastal areas can be considered beaches. For other areas, the appropriate terms are bathing areas and/or rocky (rocky) shores. The starting point for this classification can be found in the Ordinance on the Types of Sea Beaches (OG 50/95) and the conditions they must meet. According to the type, sea beaches are divided into landscaped and natural beaches. According to this Ordinance, a landscaped beach is a landscaped land area directly connected to the sea with sanitary facilities, showers and cabins, fenced on the seaside, which is accessible to all under equal conditions. The natural beach is an unarranged and directly connected to the sea land area that is accessible to all. The author Capar (Capar, 2000) advocated a new classification of beaches in a way that determines the minimum requirements that each type must meet, but also additional conditions that would apply to some of the types of beaches, as follows:

1. semi-arranged beaches (one-star beaches, etc.) should have showers, sanitary facilities, waste bins, garbage collection and removal, changing cabins, etc.;

2. arranged beaches (bathing areas) (two-star beach) must be arranged in such a way that the land and sea part of the beach can be fenced, the beach must have a rescue service and equipment, there must be the possibility of purchasing cold dishes, drinks, ice cream, press, bathing supplies, rental of bathing and recreational items, the bottom of the beach to a depth of 2 meters must be cleaned of debris and sharp objects, etc.;

3. special purpose beaches (indoor beaches).

It is evident that the beaches are the subject of interest of many authors, due to all the changes and activities that take place on them. Beaches are at the same time the subject of opposing interest of locals and tourists and foreign investors. This is especially accurate for hotel houses and camps that link their business to the coast, sea and beaches, so they decide to invest in the construction of new beach areas or the arrangement of existing ones.

Also, in recent years, there has been a growing interest in obtaining a concession for beach management, especially for beaches positioned in attractive locations. This is logical since beaches are a good opportunity to generate income. At the same time, certain procedures for obtaining a concession due to inconsistencies in legislation, insufficient transparency and even more misunderstanding of decision-makers create negative tensions among the local population. Although the procedures are carried out by experts, the hierarchy of decision-making shows pressures on the concession grantor, which in turn leads to poor beach management. However, an increasing number of authors are helping with their research in understanding the importance of valorisation of beaches as a resource.

## 5 Analysis of beaches in Portugal

Taking into account Portugal's geographical position, influencing the climate conducive to sea bathing, the extensive coastline, and with the development of tourist activity from the second half of the 1970s onwards, the sun and beach tourist product is still one of the main ones today.

### 5.1 Natural features of the Portugal coastal area

Taking into account the tectonics, the coastline orientation, the hydrodynamics as well as the presence of rivers, Campar (2009) characterizes the Portuguese continental coast in different parts. The first segment, in the north of Portugal, more specifically between the river Minho and the Douro river (where the city of Oporto is located) is made up of weak sedimentary affluences, is dominated by inlet or crenulated beaches, alternating with granitic projections as a rule. Small dune fields have developed, usually to the south of the river mouth.

The stretch of the Douro river – Nazaré is characterised by the longest sandy coasts of linear beaches, the larg-

est dune fields and important lagoons. It presents strong coastal erosion by the sedimentary deficit. It is on this stretch where coastal towns like Espinho, Aveiro, Figueira da Foz and Nazaré are found, which have benefited and grown with the beginning and massification of bathing tourism, receiving annually thousands of tourists from the interior of the country and from Spain (historically by rail). Being an area with a little indented coastline, with prevailing winds from the west, and with sea currents from the north, the water temperature is not as favourable as the one found in the Algarve (where it benefits from the proximity to the Mediterranean Sea and the orientation of the beaches towards the south). For these reasons beach tourism is more seasonal (from May to September). The main beaches of this area have an eminently urban character, being framed in a wide range of services to support the tourist activity related to bathing tourism (Campar, 2009).

The Nazaré – Cape Raso and Sines – Cape of S. Vicente stretches correspond to a high coast, mostly limestone in the first and schist in the second. They have very weak influxes and circulation of sediments that feed the cove beaches. They have few dune fields. From Cape Raso to the mouth of the Sado river (Lisbon metropolitan area) there are some bay beaches. From the mouth of the Sado river to Cape of Sines there are strong coastal projections to the north, making the waves diffract, which divides the drifts to N and S, creating beaches with extensive dune fields. This is a relatively sparsely populated area, which translates into beaches with more preserved environmental characteristics (Campar, 2009).

Regarding the Algarve coast, facing south, the western part (between Cape S. Vicente and Vilamoura – the largest resort in Europe) corresponds to a generally high coast, usually limestone and inlet or crenulated beaches. The eastern part of the Algarve coast (from Vilamoura to the Guadiana river) is characterised by a low sandy coast, with the barrier islands of Ria Formosa and a small dune field. In view of the natural conditions mentioned above and with the focus on tourism since the 1970s, the Algarve is currently Portugal's main tourist region for sun and beach tourism, most of its beaches being close to urban centres. With the most favourable characteristics for this type of tourism, the Algarve is also the most international region, receiving important tourist flows from the English, Irish, German and Spanish markets. It is also characterised by a lower seasonality than in other regions. Normally the bathing season can go from May to October.

Regarding the Azores and Madeira archipelagos, due to their position in the middle of the Atlantic Ocean (about 1500 km and 960 km from Lisbon, respectively), their volcanic origin and the ocean dynamics, there are not many sandy beaches, being mostly formed by pebbles. Even among the 11 inhabited islands only six have sandy beaches. This same condition in a certain way influences the most consumed types of tourism, being nature tourism the main one and sun and beach tourism only a complementary type of tourism in these two regions.

Although the tourist activity in Portugal has only a few decades of occurrence, the holiday and leisure time of the Portuguese population and a part of the Spanish population living in the border area started much earlier, essentially in the first decades of the 20<sup>th</sup> century. For that it was important the propagation of the railways, the reduction of working times and the consequent increase of leisure time. The therapeutic qualities of the waters, both maritime and thermal, would become an attraction factor for these areas, originating the urban growth and shaping some cities that are still nowadays seaside resorts of reference for national and international tourism, such as Figueira da Foz, Espinho and Vila do Conde, among others.

Although the various national strategic plans over the years have encouraged the diversification of the tourist offer through the development of other products such as cultural tourism, city breaks, nature tourism, among others, the Sun, Sea and Sand product continues to be a strategic reference. In the most recent national strategic plan for tourism (Tourism 2027 Strategy), beaches continue to have their important focus. In the lines of action/typologies of priority projects one can find the maritime-coastal element, that is, affirming tourism in the sea economy, and among its typologies “actions for the valorisation of the coast, including the requalification of the marginal and valorisation of the beaches”, as well as “nautical activities for the enjoyment of the sea linked to diving, sailing, canoeing, whale and bird watching, fishing, sea-tourism and beach activities, which integrate sustainability into the nautical culture of the sea” (Turismo de Portugal, 2017, p. 55).

This report also includes, among Portugal's five differentiating assets as a destination, two assets where the potential of beaches is mentioned, namely the Sea and Water. With regard to the sea, reference is made to “the coastline of excellence, with potential for surfing – recognised worldwide – and other sports and nautical activities; vast marine biodiversity; natural conditions and infrastructure for tourist cruises. The combination of sun and sea makes it possible to offer beaches (n=579) and marinas, ports and recreational docks in Portugal (n=52) of recognised quality” (Turismo de Portugal, 2017, p. 48). Regarding the active Water (referring to fresh or inland water plans), besides the valorisation of the interior of Portugal through the existence of rivers, lakes, thermal waters, among others, the existence of several fluvial beaches throughout the country (about 115) is mentioned.

## 5.2 Legislative determinants of beaches in Portugal and forms of governance

The number of beaches registered by the State for their social use and potential concessions may change from year to year, with 620 bathing waters identified in Portugal in 2020, 489 of which are on the mainland, 75 in the Autonomous Region of the Azores and 56 in the Autonomous Region of Madeira. This identification was



carried out through Ministerial Order 136/2020 of 4 June (amended by Ministerial Order 139-A/2020 of 12 June), which identifies bathing, coastal, transitional and inland waters for 2020, as well as the qualification, as bathing beaches, maritime beaches and river and lake beaches, in national territory and fixes the respective bathing seasons for 2020 (APA, 2020a).

In Portugal, the entire coastal area, where beaches are included, is in the Maritime Public Domain (DPM), established in 1864. It determines that the land strip of the coastal area is inalienable property of the State, so that private individuals (people, businesses, etc.) can only have the right to use or exploit this area, and never their property. The Public Maritime Domain in Portugal is currently governed by Law 54/2005 of November 15<sup>th</sup> and Law 58/2005 of December 29<sup>th</sup>. It currently covers a stretch of territory of about 50 m, from the low-water average line to the hinterland. The public water domain is part of a much larger whole, existing not only in port regions and areas where the tide is felt but also in the whole national territory, on the banks of rivers, streams, etc. From the legal and safety point of view, the National Maritime Authority (AMN) is the entity that coordinates the activities to be carried out by the Navy, the Directorate General of the Maritime Authority (DGAM) and the General Command of the Maritime Police (CGPM), at the national level, in the public and maritime domains under national sovereignty and jurisdiction, taking into account the legal and functional regimes that regulate the respective organic frameworks.

The Law 58/2005 of December 29<sup>th</sup> (Assembleia da República, 2005) states that it is the responsibility of the State (the Portuguese Environment Agency (APA) is the state entity that governs and monitors coastal activities through the Regional Hydrographic Administrations (ARHs)), through the appropriate planning of the use of water resources, to make their use compatible with the protection and enhancement of those resources, as well as with the protection of people and goods against phenomena associated with the same resources. Among the planning instruments created and used for such planning and, specifically with regard to coastal beaches, there are the Coastal Zone Planning Plans (POOCs). In Portugal there are 10 POOCs. Nine of these cover the entire coast of the Portuguese mainland and one the Azores archipelago.

Coastal development plans cover coastal and inland maritime waters and their beds and shores, as well as maritime and land protection areas, defined in specific legislation or under each plan. Coastal plans set out strategic options for the protection and biophysical integrity of the area involved, with the enhancement of natural resources and the conservation of their environmental and landscape values. Among them, the classification of beaches and the regulation of their use specifically for bathing purposes, and the upgrading and qualification of beaches, dunes and cliffs considered strategic for environmental and tourism reasons.

The POOCs cover a strip along the coast, which is known as a land protection area, with a maximum width of 500m counted from the sea limit to the land and a maritime protection strip up to the 30m bathymeter, with the exception of areas under port jurisdiction, and identify and define in particular (APA, 2020b):

- 1) the system of safeguards and protection for the coastline, with the aim of ensuring balanced development compatible with natural, social, cultural and economic values, with the identification of prohibited, restricted and permitted activities in the emerged area and the immersed area, according to the defined levels of protection;
- 2) the measures for the protection, conservation and enhancement of the coastline, focusing on the terrestrial and maritime bands of protection and associated ecosystems;
- 3) the proposals for intervention concerning coastal defence solutions, transposition of sediments and strengthening of the dune line;
- 4) the proposals and technical specifications of possible emergency actions and measures for vulnerable and risk areas;
- 5) the plan for monitoring the implementation of the POOC.

If the specific objectives of the POOC are observed and in relation to beaches and tourism, it is mentioned that this plan intends to serve to 1) enhance the maritime beaches, 2) promote the tourist image of the region, 3) promote the diversification of the offer of tourist products, and 4) create the necessary conditions for the affirmation of bathing tourism as a development axis of the coastal region. With regard to the area of intervention of the POOC, it is divided, for the purposes of use and occupation, into four classes: maritime beaches, natural areas; urban and urban development zones, and equipment areas (Presidência do Conselho de Ministros, 2000). As regards sea beaches specifically, these are made up of the areas comprising the beachfront, the sand and the associated water plan. For regulatory purposes, sea beaches are classified into six categories:

- a) Urban beach with intensive use – called type I – which corresponds to the beach whose surroundings are a consolidated urban core and subject to strong demand;
- b) Non-urban beach with intensive use – designated as type II – which corresponds to a beach far from urban centres but subject to strong demand;
- c) Beach equipped with conditioned use – designated as type III – which corresponds to the beach that is not subject to the direct influence of urban centres and is associated with sensitive natural systems;
- d) Beach not equipped with conditioned use – designated as type IV – which corresponds to the beach associated to systems of high sensitivity that present limitations to the bathing use, namely for reasons of safety of the users;

- e) Beach with restricted use – designated as type V – which corresponds to the beach of reduced accessibility and which is integrated in sensitive natural systems;
- f) Beach with restricted use – designated as type VI – which corresponds to the beach that, due to the need of protection of the biophysical integrity of the space, has no bathing aptitude areas (Presidência do Conselho de Ministros, 2000).

With regard to the management of coastal areas and consequently beaches, in 2018, and with effect from 1 January 2019, the national government established that coastal areas would be managed by the municipalities. Decree-Law No 97/2018 would implement the framework for the transfer of powers to municipal bodies in the area of maritime, river and lake beaches. This document recognises that local authorities are the fundamental structure for managing public services with the aim of proximity. This proximity consists of decentralisation and subsidiarity, providing for the broadening of the involvement of municipalities in sea-related areas. One of the key areas in this field is that of beaches, given their importance in environmental, social and economic terms, particularly at local level. The allocation of beach management to municipalities is intended to pursue more efficiently the legitimate interests of users and economic operators as well as the integrity of their natural resources. In this sense it would become competences of the municipalities the:

1) Ability of the municipalities: a) to clean and collect urban waste; b) to carry out the maintenance, conservation and management of, namely, the following: (i) Basic sanitation infrastructures; (ii) water supply, energy and emergency communications; (iii) Beach equipment and support; (iv) Equipment to support pedestrian and road traffic, including car parks, access and means of crossing the waters connecting shores of a beach; c) ensuring the activity of assistance to bathers in bathing areas, guaranteeing the presence of lifeguards and the existence of materials, equipment and signs intended for assistance to bathers, in accordance with the technical definition of the conditions of safety, assistance and assistance determined by the bodies of the National Maritime Authority.

2) On beaches that are the object of a concession, license or authorisation may be part of the set of obligations to be imposed on the concessionaire or on the holder of the license or authorisation through the respective title of use of water resources.

3) It is also up to the municipalities: a) concession, licensing and authorising infrastructures, equipment, beach support or similar in bathing areas, as well as infrastructures and equipment to support road traffic, including parking and access, with due regard for the applicable territorial management instruments; b) to license, permit and authorise the supply of goods and services and the practice of sporting and recreational activities; c) to create, settle and collect the fees and tariffs due for the exercise of the powers provided for in this article, which are

considered to be the municipalities' own revenues; and d) to institute, instruct and decide on administrative offence proceedings, as well as to impose the fines due.

## 6 Results and discussion

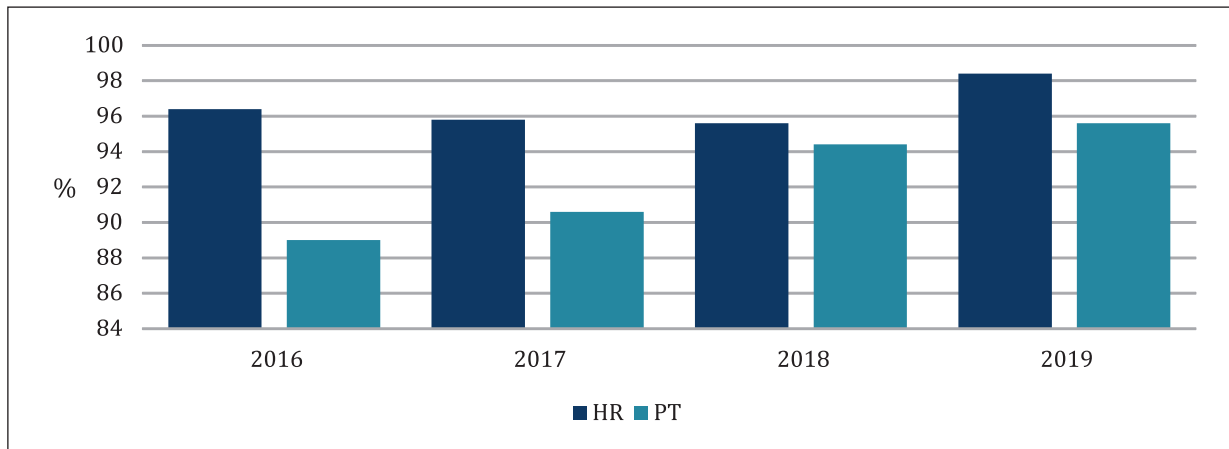
In the international practice of beach management, the valorisation of beach areas and management is oriented either to the beach as a recreational resource, or to the beach as a coastal habitat. In most cases, the connection between these two approaches has not been established, so the mutual misunderstanding deepens and strengthens the impression that these two concepts are in fact irreconcilable. Starting from the fact that beaches are a complex system of land and sea integration, extremely valuable natural habitat and significant space to which specific social and economic opportunities are closely linked, beach evaluation and/or management systems that neglect one of these components cannot provide long-term sustainable solutions.

Some authors (Simm *et al.*, 1995) define beach management as a process that takes place either by monitoring, simple interventions, recycling, supplementation, construction, maintenance of beach facilities, or any combination of these techniques, in a way that reflects an acceptable compromise with available resources and goals related to coast and nature protection, quality of life and the economy. In this way, the biological function of the coastal area is improved (through increased biodiversity, dune management and non-mechanical cleaning of the beach). It also has a positive effect on the socio-economic structure of the beach environment and enables greater performance through sustainable use, reduced costs of maintenance and renovation of beaches.

In many countries, local governments have the authority to enact bylaws relating to public beaches and beach management. Of particular interest for beach management is legislation relating to bathing sea quality, beach safety, coastal recharge and protection, access to beaches and the protection of key ecosystems, such as dunes.

Croatian legislation has regulated some beach management issues, but has failed to improve the decision-making system, especially in concession award procedures. Procedures are complex, often time-consuming, with concessionaires usually not having adequate data on: the carrying capacity of the beach, the offer of the environment and more. Major problems also arise due to the backfilling of beaches, where inspections do not have adequate penal mechanisms to prevent this. Therefore, the importance of implementing environmental impact assessment procedures, verifications and appropriate assessment (with regard to Natura 2000) of all coastal and beach related projects should be pointed out.

In Croatia and Portugal, bathing water quality is systematically monitored. In Croatia, the test was carried out at 913 points in the 2020 season. Ninety-two hundred and



**Figure 1** Seasonal display of excellence of quality coastal bathing in Croatia and Portugal

**Source:** Authors according to: <https://mzoe.gov.hr/vijesti/kakvoca-voda-i-mora-za-kupanje-u-republici-hrvatskoj-i-dalje-medju-najboljima-u-europi/589>; <https://www.eea.europa.eu/publications/soer-2020>; <https://www.eea.europa.eu/themes/water/europes-seas-and-coasts/assessments/state-of-bathing-water>

sixteen samples were collected, of which 8843 samples were rated as excellent, 219 rated as good, 125 rated as satisfactory and 29 rated as unsatisfactory. According to the European Environment Agency's report on the quality of bathing water and the sea in 2019, Croatia ranks 5<sup>th</sup> in total water level and bathing quality with 95.6% of test points with an excellent score behind Cyprus, Austria, Malta and Greece. Portugal is in 7<sup>th</sup> place, just behind Germany. The following is a comparative overview of bathing water quality excellence in Croatia and Portugal (Figure 1).

Although the local population has direct and indirect benefits from the income that beaches generate, the fact is that the benefits should be much greater. Croatia has not set up the beach management on the national level; beaches are therefore managed by regional or local administration that is not sufficiently motivated, and in some regions not even meeting the required professional standards. According to the authors (Kovačić et al., 2018), Croatia has improved its beach management system, but as a country with such a long coastline and some of the most beautiful beaches in the world should definitely have established a separate public authority or agency to manage coastal area including beaches.

In Portugal the coastal areas are public domain, but the leisure or tourist activities associated with the beaches can be concessioned and managed by private stakeholders or companies. This process of concession and management became closer to the population of each territory when Decree-Law No 97/2018 gave the municipalities the competence to deal with this valence of the beaches. However, the concession process for the operation of services such as restaurants, bars and others on a given beach is always dependent on the compliance parameters envisaged and which are approved by the two major public authorities, namely the Ministry of Defence, through

the National Maritime Authority (AMN) and at local level by the Captaincy of Porto with an area of influence in the municipalities where the beaches are located). The other major public authority is the Portuguese Environment Agency through one of the Regional Hydrographic Administrations (ARH) of the territory where the municipality and the beach in question are located.

The tendency is for some simplification in the concession of structures and services on the beaches, allowing municipalities to manage and adapt the existing offer on the beaches to the need or tourist profile they want to enhance in their territory. An important fact to highlight is also climate change and the continuous dynamic coastal process due to the Atlantic Ocean, making it necessary to change the classification or category of some beaches with some frequency, and conflicts may arise (for example, between the concession contracts signed, some for several years, but the physical changes of the beach and the existence of risk make practical changes in existing services).

## 7 Conclusion

The results of this research can contribute to a better understanding and governance, especially beach managing. It should be emphasized that there are significant limitations that come from investors, illegal encroachment and construction as well as the adaptation of spatial plans to the needs of individuals. A major threat is the legal framework that does not have adequate repressive (monetary and other) application for all those who appropriate and pollute the coast and beaches. Therefore, it makes difficult to implement integrated managing and a holistic approach.

Beach management today has a much broader meaning, both economically and socio-ecologically, which is why management should be responsible. This means creating a

unique beach cadastre and understanding the importance of the beach as a consumable resource. The implementation of responsible management and the establishment of coordination between institutions (national, regional and local), implies the development of management and balanced development.

The basic determinant of beach management at the local level includes citizen participation in decision-making on issues of public use, and partnerships between local authorities, civil society organizations and the private sector.

The fact is there's no perfect beach managing model. There are theoretical and practical experiences, methods and techniques and recommendations that can contribute to the understanding of processes and activities, those that take place on the coast, along the coast and on the beach. The experiences of individual countries and the methodological approach in the evaluation of the beach area are an additional tool for efficient and sustainable beach management. Recommendations for further research go in the direction of an interdisciplinary and holistic approach and respect for the beach as a recreational resource instead of a source of income.

## Acknowledgments

This work was supported by the European Regional Development Funds, through the COMPETE 2020 – Operational Programme 'Competitiveness and Internationalization', under Grant POCI-01-0145-FEDER-006891; and by National Funds through the Portuguese Foundation for Science and Technology (FCT) under Grant UID/GEO/04084/2013.



## References

- [1] Anić, V. (1998). Dictionary of the Croatian Language, Third, expanded edition, Novi Liber, Zagreb 1998, p. 768.
- [2] APA – Agência Portuguesa do Ambiente (2020a). *Época Balnear 2020*. <https://apambiente.pt/index.php?ref=19&subref=906>.
- [3] APA – Agência Portuguesa do Ambiente (2020b). *Planos de Ordenamento da Orla Costeira*. <https://www.apambiente.pt/index.php?ref=16&subref=7&sub2ref=10&sub3ref=94>.
- [4] Assembleia da República (2005). *Lei 58/2005 de 29 de dezembro*. Diário da República n. 249/2005, Série I-A de 2005-12-29.
- [5] Baldwin, J. (2007). Understanding tourist beaches as eco-social landscapes: Seeking sustainability through integration of human and non-human wealth production. *Études Caribéennes*, 7/2007, Les risques naturels majeurs dans la Caraïbe.
- [6] Campar Almeida, A. (2009). Ambientes Litorais – Programa, Conteúdos e Métodos de Ensino, Faculdade de Letras da Universidade de Coimbra.
- [7] Capar, R. (2000). Do we need regulations on beaches, *Maritime Bulletin*, No. 38, Rijeka.
- [8] Da Silva, C. P. (2002). Beach Carrying Capacity Assessment: How important is it? *Journal of Coastal Research*, 2002, Special Issue, 36, pp. 190-197.
- [9] Da Silva C. P., Alves, F., Rocha R., (2007). The Management of Beach Carrying Capacity: The case of northern Portugal. *Journal of Coastal Research*, SI 50 (Proceedings of the 9th International Coastal Symposium), pp. 135-139. Gold Coast, Australia.
- [10] Decree on the procedure for granting a concession on a maritime domain (OG 23/04, 101/04, 39/06, 63/08, 125/10, 83/12).
- [11] Decree on the procedure for granting a concession permit on a maritime domain (OG 36/04).
- [12] Defeo, O., McLachlan, A., Schoeman, D.S., Schlacher, T.A., Dugan, J., Jones, A., Lastra, M., Scapini, F. (2009). Threats to sandy beach ecosystem: A review. *Estuarine, Coastal and Shelf Science*, 81, pp. 1-12.
- [13] Drljača, M. (2004). Resources as a structural element of the management system. Proceedings of the 1st Conference of the Croatian Engineering Association Resource Management Factor of Business Success, Zagreb, Opatija, pp. 35-45.
- [14] Duplančić Leder, T., Ujević, T., Čala M. Vidak, I. (2000). Categorization and Number of Islands in the Republic of Croatia, *Period, biol.*, Vol. 102, Supplement 1, pp. 281-84.
- [15] Duplančić Leder, T., Ujević, T., Čala, M. (2004). Coastline Lengths and Areas of Islands in The Croatian Part of the Adriatic Sea Determined from the Topographic Maps at the Scale Of 1:25.000, *Geoadria*, Vol. 9, No. 1, Available at: <https://doi.org/10.15291/geoadria.127>.
- [16] Kovačić, M., Magaš, D. (2014). Beaches as a Croatian Valuable Resource and Question are how to Manage them? 7th World Conference for Graduate Research in Tourism, Hospitality and Leisure, Proceedings Book, 3-7 June 2014 Istanbul, Turkey, pp. 503-508.
- [17] Kovačić, M., Zekić, A. (2018). Some Issues Referring to Managing Beaches at the Local Level, Case Study of Croatia, *ToMS, an International Scientific Journal*, Vol. 7, No. 1, pp. 71-75.
- [18] Law on Concessions (OG 69/17, 107/20).
- [19] Law on Maritime Property and Seaports (OG 158/03, 100/04, 141/06, 38/09, 123/11, 56/16, 98/19).
- [20] Law on Physical Planning (OG 153/13, 65/17, 114/18, 39/19).
- [21] Ordinance on the types of sea beaches and the conditions they must meet (OG 50/95).
- [22] Perinić Lewis, A., Adžija, M. (2015). Globalna i lokalna plaža na primjeru dubrovačkih gradskih plaža i plažnih kultura, *Studia ethnologica Croatica*, Vol. 27, No. 1, 2015, doi: <https://doi.org/10.17234/SEC.27.11>.
- [23] Pravdić, V. (2008). Prikazi knjiga: Uvod u infracrvenu spektroskopiju / Helmut Günzler i Hans-Ulrich Gremlich Ecological Economics and Sustainable Development / Herman E. Daly. *Chemistry in industry*, Vol. 57, No. 12.
- [24] Rudan, E., Krstinić Nižić, M. (2018). The Role of Beaches in the Tourism Offering: The Case Study of the Municipality of Lovran, Pomorstvo: *Journal of maritime studies*, Vol. 32, No. 2, pp. 219-227.
- [25] Runko Luttenberger, L. (2014). Environmental Value of Beaches for the Local Community and Tourists in Tourism & Hospitality Industry 2014: Trends in Tourism and Hos-

- pitality Management / Perić, J. (ur.). Opatija: Faculty of Tourism and Hospitality Management, Opatija, 2014, pp. 121-130.
- [26] Presidência do Conselho de Ministros (2000). *Plano de Ordenamento da Orla Costeira (POOC) de Ovar-Marinha Grande*. Diário da República. [https://www.apambiente.pt/\\_zdata/Politiclas/Agua/Ordenamento/Documentos/POOC/POOC\\_Ovar\\_MGrande/2regulamento.pdf](https://www.apambiente.pt/_zdata/Politiclas/Agua/Ordenamento/Documentos/POOC/POOC_Ovar_MGrande/2regulamento.pdf).
- [27] Presidência do Conselho de Ministros (2018). *Decreto-Lei n.º 97/2018*. Diário da República. <https://data.dre.pt/eli/dec-lei/97/2018/11/27/p/dre/pt/html>.
- [28] Simm, J.D., Beech, N.W. & S. John (1995). A Manual for Beach Management. (U): *Proceedings of Conference on Coastal Management'95 Putting Policy into Practice*. Institution of Civil Engineers, Bournemouth, Thomas Telford, U.K., pp. 143-162.
- [29] Turismo de Portugal (2017). *Estratégia Turismo 2027*. Turismo de Portugal.
- [30] UNEP/MAP/PAP (1997). [https://www.biodiversity.ru/coastlearn/tourism-eng/con\\_capacity.html](https://www.biodiversity.ru/coastlearn/tourism-eng/con_capacity.html).
- [31] Williams, A., Micaleff, A. (2009) *Beach Management: Principle & Practice*, Earthscan Publications Ltd., London, U.K., 2009.
- [32] Zacarias D.A., Williams A.T., Newton A. (2011). Recreation carrying capacity estimations to support beach management at Praia de Faro, Portugal, *Journal of Applied Geography*, Vol. 31, Issue 3, 2011, pp. 1075-1081, doi: <https://doi.org/10.1016/j.apgeog.2011.01.020>.