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Determining the Maritime Domain Boundaries and Maritime Domain Cadastre Issues and dilemmas

Abstract

The paper explains the issue of establishing a maritime domain cadastre and the importance of establishing the boundaries of maritime domain. Particular importance is given to the clear definition of the concept of maritime domain in order to make it clear what area can be declared a maritime domain and why and what is its spatial coverage. Legislation has tried to establish a maritime cadastre as a separate part of the cadastre, but it has not yet been achieved. Today, the maritime domain and its boundaries are entered in the land registers kept by the municipal courts.

The authors consider it important to initiate the process of revision of Maritime Domain and Seaports Act (hereinafter: MDSA), adopted in 2003, which has changed several times, but without resolving the open issues of maritime domain management. This is especially important in order to avoid the misuse and misappropriation of maritime domain and to harmonize the activities of coastal counties in the process of establishing the boundaries of maritime domain.

Keywords: legal regulation, boundaries, concession, maritime domain, maritime domain cadastre.

1. Introduction

Maritime domain is a domain of public interest to the Republic of Croatia, under its special protection, employed or utilized under the conditions and in the manner prescribed by MDSA.[23] Since the adoption of the MDSA, and even before that, the professional public and the legal doctrine have warned that the definition of maritime domain should be clearer and more precise so that in practice there would be fewer controversial situations in determining the maritime domain boundaries. The issue of

determining the maritime domain boundaries and the establishment of the maritime cadastre is the main idea of this paper, which is divided into four thematic units. The first part provides a conceptual definition of the maritime domain with reference to the historical overview of the change in the legal status of the maritime domain from a public good to a common good.

The second part refers to the analysis of the criteria and procedure for determining the maritime domain, which is one of the conditions for registration of maritime domain in the land register, i.e. granting a concession for economic use of maritime domain or granting a concession for special use. The authors also point out certain shortcomings of existing solutions and make suggestions for improvement.

The paper also discusses the need for establishing an appropriate maritime domain cadastre and the role of GIS in maritime domain management. Although the issue of establishing the maritime domain cadastre was legally regulated by the Ordinance on the Establishment and Maintenance of the Maritime Domain Cadastre in 1976, [25] it ceased to be valid with the Ordinance on the Registration and Marking of Maritime Domain Strip in 1998, [26] and has never been put into effect, which is the reason why maritime domain is today recorded in the land registers.

2. Definition of maritime domain

Throughout history, the maritime domain has changed its legal status and has been subject to changes conditioned by political circumstances and social and legal order. The first comprehensive regulation on the maritime domain was the 1939 legislative Decree on the maritime public domain, [8] which employed the term “maritime public domain”, while later regulations used the current term “maritime domain”. For the first time, the Decree dealt with the matter of maritime domain in a comprehensive and contemporary way. The possibility of taking possession or acquiring the property right over the maritime public domain was based solely on the decision by the competent ministry. The legal effects of the decision resulted in the removal of the characteristics of the maritime public domain and the definition of the conditions under which property or other real right in the area concerned may be acquired (paragraph 3).

The maritime public domain was defined as follows: “Maritime public domain encompasses: sea coast, sea bays, sea ports and wharves, breakwaters, embankments, estuaries that flow into the sea, canals connected to the sea, as well as all others parts of the state territory at sea, which by their nature serve or can serve, or are intended for maritime traffic or general maritime use, including sea fishing”.

In case of doubt as to what maritime public domain is, the Maritime Traffic Directorate made a decision and established the boundaries of the domain. The interested party had the right to appeal against such a decision to the Ministry of Transport (paragraph 2, subparagraph 3).

According to the said Decree, the maritime domain has been defined as “maritime public domain in general use”, which means that it was out of legal transaction for the

common good. Frković [15] points out that the Decree consolidated a legal tradition that had existed before that, manifested in the principle that the maritime domain is a common good, outside legal transactions and that no property rights or other rights in rem may be acquired within that regime.

The main act on the of ports and harbours from 1961, [21] adopted as a republic regulation, defined maritime domain as a “public-owned common good”, allowing the right of use as a counterpart to today’s concession and prohibited the acquisition of property rights and other rights in rem.

After the introduction of public property, there was a need to adopt a new appropriate regulation, so in 1974 the Maritime and Water Resources, Ports and Harbours Act was adopted, [22] defining maritime domain as public-owned property in general use. This Act introduced the concept of a minimum coastal strip of 6 meters, which represented the so-called uncontested maritime domain, which is *ex lege* maritime domain. The coastal strip might have been wider or, in exceptional cases, narrower than 6 meters.

By abandoning the socialist order in the early 1990s, the process of adapting the legal system to new social and property relations began, and in 1994 the Maritime Code was passed. According to Article 49 paragraph 1 of the 1994 Maritime Code “maritime domain consists of internal sea waters and territorial sea, the seabed and underground, and a part of the mainland which by its nature is intended for public maritime use or is declared as such.”

Today, the Maritime Domain and Seaports Act of 2003 is in force, which treats maritime domain as a public good of interest to the Republic of Croatia, under its special protection, with the maritime domain consisting of internal sea waters and territorial sea, the seabed and underground, and a part of the mainland which by its nature is intended for general use or is declared as such, as well as everything that is permanently connected to that part of the land on or below the surface. This legal solution expanded the category contained in the Constitution of the Republic of Croatia “goods of interest to the Republic of Croatia”.

The Act on Property and Other Real Rights (hereinafter: AP) (Article 3) recognizes the category of “common goods” as those “parts of nature which by their characteristics cannot be owned by any natural or legal person individually, but are utilized by all”, and this includes “water in the sea and the sea coast”. [1]

The provision of the Constitution of the Republic of Croatia that “... the sea, the sea coast and islands, waters, airspace, mineral resources and other natural resources...”, are goods “of interest to the Republic of Croatia”, if so determined by law, provides no indication as to the nature of property, since the mere fact that a good is defined as a good “of interest to the Republic of Croatia” does not mean the establishment of a separate property arrangement. [6]

The legal nature of the maritime domain has also been discussed in scientific circles. Babac points out that it is clear that although the maritime domain is considered a public good in terms of AP, by its nature at least some of the things in the maritime

domain can be owned by individuals and legal entities, so that the maritime domain actually implies what is in AP called public good in general use, and such would be owned by the Republic of Croatia. [2] This is especially so when the fact that the AP does not allow the acquisition of the right of property or any other real right under any title over the maritime domain is taken in consideration.

Borković conclude that the maritime domain is part of the public (general) good and finds its special place in the classification of public goods according to certain criteria. [4]

Ljubetić [20] finds that the term maritime domain is used in public as a synonym for some of the greatest natural beauties of the Republic of Croatia.

This leads us to conclude that in different historical periods, but also in theoretical doctrine, different interpretations of the legal status of maritime domain were represented and it was considered a maritime public domain, but also a maritime domain of general interest.

According to the MDSA, which represents a positive law for regulating the maritime domain, maritime domain is considered a public good consisting of three components, namely coastal, aquatic and maritime component, i.e. the sea coast, inland waters and territorial sea and seabed and underground, which should be respected as such. [23]

3. Establishing the boundaries, recording and registering the maritime domain

This chapter explains the procedure for establishing the boundaries of the maritime domain, and the recording and registration of the maritime domain in the land register.

3.1. Establishing the maritime domain boundaries as prerequisite for registering into land register

As mentioned in the previous section, the maritime domain consists of three components: aquatic, coastal and underwater. The data on the aquatic and the underwater components are contained in the maritime cadastre kept by the Croatian Hydrographic Institute in accordance with Art. 15 para. 1 of the Hydrographic Activity Act. [17] It is important to note that the maritime cadastre forms a part of the hydrographic information system together with the maritime spatial data infrastructure (MSDI), and is used to create and exchange data relevant to navigation safety, defence, environmental protection and exploitation of marine resources.

Unlike the maritime component of the maritime domain, the method of recording the terrestrial part of the maritime domain is regulated by the MDSA, the Decree on the Procedure for Determining the Maritime Domain Boundary [7] and the Ordinance on the Registration and Marking of Maritime Domain. [27]

Since the MDSA regulates the keeping of maritime property records in land registers at municipal courts, and no detailed rules are provided that would be adjusted to the legal nature of maritime domain as a public good, the regulations governing cadastre and land registry are applied to maritime domain records, which includes: the Land Registry Act, the State Survey and Real Estate Cadastre Act and the Ordinance on Land Cadastre. [32]

The MDSA contains only one provision that refers to the records of maritime domain, in Art. 15 stipulating that the records on maritime domain are kept in land registers, while the data on maritime domain boundaries, maritime domain parcels and objects on them are entered into the cadastre. [33]

The drafting of maritime domain boundaries and its implementation is part of the extraordinary management of the maritime domain. The boundaries of the maritime domain are determined on the basis of the annual maritime domain management plan or, exceptionally, at the request of the parties.

The MDSA provides for a special Commission for Boundaries, operating within the ministry responsible for maritime affairs (hereinafter: the Ministry Commission). The Ministry Commission makes decisions on determining the maritime domain boundaries based on the proposal of the County Commission for Boundaries. The MDSA prescribes only the number of members of the Ministry Commission consisting of a president and two members, but not their professional competence which can be considered as a shortcoming. As opposed to that, the on the Decree on the Procedure for Determining the Maritime Domain Boundary regulates the composition of the county commissions in detail. [7]

The authors point out that the existence of two commissions involved in the process of determining the maritime domain boundaries certainly contributes to the length of the procedure and it would be desirable to change the relevant legal norm to define a single body that will handle the entire procedure.

Article 4 of the Decree regulates the procedure for determining the boundary of a maritime domain. Namely, the county government adopts the annual maritime domain management plan for the following year by 1 December of the current year, and the plan, as well as the report on the implementation of the annual plan for the current year, must be submitted to the competent ministry. [7]

The applicants may be the Government of the Republic of Croatia, state administration bodies, local self-government unit bodies and natural and/or legal persons.

The applicant has to enclose with the application, the relevant documentation relating to: a copy of the cadastral plan of the subject area for which the boundaries are sought, an excerpt from the title deed, an excerpt from valid spatial planning documents, an excerpt from the land register, a geodetic survey or digital orthophoto plan with integrated copy of the cadastral plan – made in accordance with the regulations on topographic surveying and contains a line representing the mean higher high waters line and a line 6 meters away from these waters and proof of payment of fees for

determining the maritime domain boundaries. [7, 36]

In case the request is complete, the County Commission is obliged to prepare and submit the boundary proposal to the Ministry Commission within 90 days. In order to speed up the decision-making process on determining the maritime domain boundary, the authors believe that the prescribed deadlines should be shortened, namely the deadline for supplementing the request from 15 to 8 days and the deadline for submitting proposals to the Ministry Commission from 90 to 30 or, at most, 60 days.

The Ministry Commission is obliged to submit the request and the accompanying documentation to the County State Attorney's Office, as the legal representative of the Republic of Croatia, which has the status of a party in the procedure.

The Ministry Commission makes a decision in the administrative procedure which should contain a description of the maritime domain boundary and a list of land registry and cadastral parcels located on the maritime domain to be determined (Article 9 of the Decree on determining maritime domain boundaries).

Just as the existence of two commissions involved in the process of determining the maritime domain boundaries has been criticized, certain shortcomings point to the fact that an appeal can be lodged against the decision of the Ministry Commission to the same Ministry that established the Commission for Boundaries.

An administrative action may be initiated against the decision made on appeal to the Ministry, which provides additional control by the Administrative Court of the Republic of Croatia, but may further affect the length of the proceedings given the time period within which the court will make a decision.

Since the MDSA defines what maritime domain is, the decision on determining the boundary is declaratory, not constitutive in nature, so that the decision only determines which real estate in a particular area are maritime domain.

The proposal for the registration of a maritime domain is submitted by the State Attorney's Office after the competent ministry submits a decision on determining the maritime domain boundaries.

The registration in the land register can be carried out only by an order issued by the land registry court in the decision on registration.

Although the importance of defining the maritime domain boundaries is unquestionable and is generally agreed upon by both theorists and practitioners, in practice the process is slow. There are several reasons for that. One of them is the lack of systematic determination of the maritime domain boundaries, so that each county, in accordance with their capabilities, plans the extent to which it will initiate the process of determining the maritime domain boundaries. The fact that all cases are decided by the Ministry commission, which has only three members, certainly contributes to slowness. A further problem lies in the fact that cadastral plans do not correspond to the real situation given that numerous buildings have been built illegally over the decades.

3.2. Recording and registering the maritime domain

The establishment of maritime domain parcels is a necessary step for further activities related to maritime domain management and the concession award procedure. If a certain area is not registered in the cadastre and land registers as a maritime domain, it is not possible to obtain a concession for its use. The process of establishing maritime domain parcels and concessions on maritime domain is very time-consuming.

The regulations on maritime domain introduce several phases that are necessary for the establishment and registration of maritime domain parcels and granting of concessions for the economic use of a maritime domain or special use.

In the first phase, it is necessary to prepare geodetic bases for the purpose of drafting the maritime domain boundaries. The geodetic bases for the proposal of maritime domain boundaries are prepared by authorized geodetic companies. The result is a geodetic survey of the area or a digital orthophoto plan at a scale of 1:2000, which together with an integrated copy of the cadastral plan and a chart of the mean higher high waters (MHHW) line and a line six meters horizontally away from the MHHW line serve as a basis for drafting the maritime domain boundary.

This is followed by the drafting of the maritime domain boundaries. The County Commission for Boundaries uses geodetic bases on which the area closed by the MHHW line and the line six meters away from the MHHW line is drawn. This represents the statutory minimum, i.e. the strip of minimum width which represents a maritime domain in accordance with the MDSA. The proposal of the maritime domain boundary is submitted to the Ministry Commission, which confirms the proposal by issuing a decision or returns it for further processing to the County Commission.

After the decision becomes final, a geodetic study will be prepared for the purpose of recording the maritime domain. At the same time, the boundary of the maritime domain is being marked on the field. Recording and marking of maritime domain is performed according to the Ordinance on registration and marking of maritime domain. The maritime domain parcel receives a number for entry in the cadastre and land register. [27]

This is followed by the entry of maritime domain parcels in the cadastre and land register. It should be emphasized that it is still not possible to issue a concession for the registered maritime domain parcels, since they were formed primarily for the purpose of recording the maritime domain.

Upon completion of the procedure, the maritime domain boundary is established and the maritime domain parcels are registered in the cadastre and land register. If an application for a concession has been submitted, it is necessary to establish a new parcel in the area of the maritime domain to which the concession will apply. The newly formed parcel must also be registered in the cadastre and land register.

When the maritime domain parcels are registered in the cadastre and land register for the purposes of concession, it is possible according to Concession Act [5] and MDSA, to initiate the procedure of granting a concession for special use or economic

use of the maritime domain. The concession for which the decision on granting has been made and the signed Contract shall be entered in the Register of concessions. [28]

The following phase includes the entry of the concession in the cadastre and land register.

The construction of new buildings on the maritime domain and their registration in the cadastre and land register can begin only after the above procedures have been completed.

The maritime domain boundary on the maritime side is represented by the outer boundary of the territorial sea, while the boundary on the land side is determined by its coastal component. [32] The maritime domain boundaries on the maritime side are determined by the rules of international maritime law. According to several authors, it is questionable to determine the boundary of the maritime domain on its land part, which is not unambiguously determined by legal regulations and leaves room for different interpretations of what is considered as the boundary of the maritime domain. The length of the coast (mainland and islands) for which the maritime domain boundary has been established, in relation to the total length of the coast, is practically negligible. It amounts to approximately 5% of the total length of the coast, which is more than the minimum, taking into account that in the Republic of Croatia the maritime domain boundary has been determined since 1994, with the adoption of the Maritime Code.

Since the Maritime Code has entered into force, the procedure of maritime domain boundary establishment involving larger areas have been initiated in rare cases. Most often, these were individual initiatives for the systematic resolution of the maritime domain boundary, both by the state and by regional and local self-government units. In the Primorje-Gorski Kotar County, most of the procedures were initiated by the County, which did not cover larger areas, but the boundary determination procedure was carried out in areas attractive for economic use. In other counties, the applicants for determining the maritime domain boundary were mostly natural or legal persons, as future potential concessionaires, i.e. persons who wanted to resolve their property issues.

The current state of determined maritime domain boundaries in the seven coastal counties is still unsatisfactory. The total length of the maritime domain boundary in the Republic of Croatia in 2010 was about 700 km.[32] In practice, various problems continuously arise. The matter of determining the maritime domain boundary is in itself complex and demanding. According to Ljubetić [20] the coverage of the maritime domain, and consequently the maritime domain boundary, in accordance with the MDSA, is defined by both natural features and function or content, which in practice raises a number of questions. The procedure is lengthy and uncertain, and there is a visible inconsistency between the actual situation in the coastal area and the situation on the cadastral plans. There is also a lack of educational guidelines for those involved in the process of determining the maritime domain boundary. One of the major problems is the insufficiently precisely prescribed criteria for determining the maritime domain boundaries, and the provisions on the registration of maritime domain in the land register. The slow process of the registration system is obvious, as well as the

unsatisfactory cooperation of the institutions involved in the process.

According to the competent Ministry, the situation in practice was not better in 2021 either. The total length of the determined maritime domain boundary in relation to the total length of the coastline of the Republic of Croatia in 2021 was only about 21%, and according to the total length of the determined boundary, Primorje-Gorski Kotar and Šibenik-Knin counties are in the lead. Slow procedure is the result of a large number of procedures as well as the number of documents that need to be collected in order to establish the boundary. It is necessary to provide copies of the cadastral plan of the area, excerpts from the title deed and valid spatial planning documents and land registers, and geodetic surveys of the area where the boundary is being determined. It should be emphasized that due to many unresolved property issues, and obstruction by the current users of and interest groups, the procedures for determining the maritime domain boundaries are additionally burdened by time and legal constraints.

4. Maritime cadastre

The cadastral area at sea is mentioned within the term cadastral spatial unit. Determining the cadastral spatial units, besides cadastral surveying and technical reambulation, preparation and maintenance of cadastral records, is a part of the real estate cadastre. The basic spatial unit of the real estate cadastre is the cadastral parcel. The cadastral parcel is a part of the area of the cadastral municipality, i.e., the cadastral area at sea, bounded by the boundaries (abuttals and other boundaries) that determine the legal relations on land, and by the boundaries of land use. The cadastral parcel is presented in the cadastral records with its boundaries and marked with a special number within the cadastral municipality or cadastral area at sea. The boundary of the cadastral parcel on the sea coast may also be the boundary formed by the MHHW line, or another line used to determine the maritime domain boundary. The cadastral municipality and the cadastral area at sea are spatial units of the real estate cadastre for which a cadastral record is prepared. As a rule, the cadastral municipality includes the area of one inhabited place with the associated land, while the cadastral area at sea includes the coastal sea (internal sea waters and territorial sea) and the continental shelf of the Republic of Croatia. The area and name of the cadastral municipality or cadastral area at sea are determined by the State Geodetic Administration in cooperation with the minister responsible for justice (in the case of cadastral municipality) or the minister responsible for maritime affairs (in the case of cadastral area at sea). [9, 10]

The concept of maritime cadastre was introduced into Croatian legislation in 1998 with the entry into force of the Hydrographic Activity Act. From the definition of the maritime cadastre in the Hydrographic Activity Act, it is evident that the records and management of the marine and underwater part of the maritime domain will be performed from the point of view of navigation safety. [17] The records of the maritime and underwater part of the maritime domain from the point of view of exercising concession and other rights are not defined by this law. Records and management

of the marine and underwater part of the maritime domain from the point of view of navigation safety should be performed according to a special ordinance to be brought by the minister responsible for maritime affairs. This ordinance was supposed to be adopted within 30 days from the day the Hydrographic Activity Act came into force, but it has not been done to date. The Hydrographic Activity Act also defines that a public institution called the Croatian Hydrographic Institute is established to perform hydrographic activity of interest to the Republic of Croatia. Among the listed hydrographic activities is the organization and maintenance of the maritime cadastre.

The Maritime Code does not say anything about the registration of the maritime and underwater part of the maritime domain, because it does not mention the competent body or the manner of establishing and keeping records of that part of the maritime domain. Bolanča point out, that only in some places the erection and maintenance of devices and appliances at sea and attached to the seabed for commercial breeding of fish and other sea creatures, i.e. the construction of facilities in inland waters and in the territorial sea or on their shores are mentioned. [3]

The main purpose of creating a maritime cadastre in a coastal state is the right and responsibility to integrate marine, underwater and coastal data (obtained mainly by hydrographic surveying in the broadest sense), terrestrial data (topography, geology, etc.) and other information, and their presentation in 3D model of the area. According to Gržetić, it is very important that the collection of data on the sea and underwater in Croatia and in the world is systematically carried out in hydrographic institutions or under their jurisdiction. [16]

Most of the rights at sea, which are now multifaceted (mining, fishing, mariculture, etc.), were once considered only for navigation. These multiple activities need to be coordinated, which is impossible to achieve through an approach identical to that on land. It could be said that in the case of the sea and the marine environment, there are one or several variables more than on land. Maritime transport is often the most important component, but there is also tourism, an integrated approach to the preservation of maritime space, exploitation of natural resources, etc. The areas of the sea in this regard differ significantly, and consideration of all aspects is impossible with the dispersion of competencies in different ministries.

Everything that is known about spatial data can be applied to the marine environment. However, unlike land data, the marine environment contains many problems:

- there is no concept of property rights at sea,
- it is not possible to use classical means of marking boundaries,
- a three-dimensional representation of the marine environment is required,
- it is common to find ambiguous rights at a certain site,
- rights can also vary over time, thus adding a fourth dimension to spatial data,
- the basic line to which maritime boundaries are linked is not constant.

These are all components that should be taken into account when creating a maritime cadastre.

The concepts of infrastructure of maritime data (IMD) about the sea, maritime cadastre and maritime spatial planning have emerged recently in response to the global understanding of the need to improve marine environmental management. The management of various rights, restrictions and obligations is ideally achieved through the cadastre. The maritime cadastre provides a basic set of data that are of particular importance for the management of the marine and coastal area. The marine environment, however, requires a certain comprehensive platform for spatial information to facilitate their coordinated use and management. Most current IMD initiatives focus on the land component with limited consideration of maritime and coastal IMDs. Nevertheless, there is a growing and urgent need to create IMDs to facilitate maritime area management. The functionality of the cadastre in support of IMD was recognized after lengthy discussions on how to use and adapt the tools used in the land area to service the needs of the marine environment. The cadastre and IMD are fundamental to the way maritime information is generated and shared and to the effective management of the maritime area.

The need for establishing a maritime cadastre was recognized at the Marine Environment Management Workshop of the Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP) held in 2004. At the 17th United Nations Regional Cartographic Conference for Asia and the Pacific (UNRCC-AP), in 2006, a resolution was adopted aimed at defining the spatial dimension of the marine environment and the concepts of maritime cadastre and IMD within maritime management. [34] The maritime cadastre is conceived as a management tool that spatially describes, visualizes and realizes formally and informally defined boundaries, together with associated rights, restrictions and obligations. This tool is at the heart of the maritime IMD and facilitates the use of spatial information relevant to the sustainable development of the marine environment. [35]

The concept of the Maritime IMD to support the spatial dimension of maritime governance has been evolving since the late 1990s, together with the celebration of the International Year of the Ocean. The joint work of the IOC (Inter Governmental Oceanographic Commission Committee on International Oceanographic Data and Information Exchange)¹ on the exchange of international oceanographic data and information has been going on for several decades, while the national maritime IMD specification began at the beginning of the new millennium. [19] In doing so, some countries are trying to improve maritime governance by improving the accessibility and availability of spatial data. Some countries consider the benefits that maritime governance can bring them and use spatial data to improve the decision-making process and governance in the marine environment. Each of the countries approached this idea from their own perspective, but following the Directive of European Commission (INSPIRE, 2007) and developing very similar methods to improve maritime governance using spatial data management tools. [12, 13]

¹ Intergovernmental Committee of the Oceanographic Commission for the International Exchange of Oceanographic Data and Information

5. Role of GIS in maritime domain management

For the establishment of the maritime cadastre and the management of the maritime domain in general, the geoinformation system (GIS) is of great importance, with the main task to collect, consolidate and store data on maritime domain parcels. GIS is the basic and main tool here. In Japan, a prototype of an interactive maritime cadastre has been developed, while in the USA the basis for the development of a multipurpose maritime cadastre is the GIS software package as it provides all users with a comprehensive visual approach to data analysis. [29] Decisions on maritime domain boundary are only declaratory in nature, which means that the decision determines that some real estate or land is a maritime domain, as it is defined by the law as such. In case new cadastral parcels have been determined in the area of maritime domain, they are entered in the cadastre and land registers as “MARITIME DOMAIN”, and on parcels outside the domain belt the owner is the state, i.e. “REPUBLIC OF CROATIA”.

The establishment of the maritime domain GIS combines data on the areas of the maritime domain which include the administrative and cadastral division of counties, coastal (line) areas, areas (lines) of the protected coastal zone, land borders, established maritime domain boundaries, those in progress of establishment and areas where the boundaries have not yet been established, data on cadastral and land registry parcels entering the [11]: maritime domain, issued concessions and concession decisions, underwater sites, utility, telecommunications and other lines on the maritime domain and other data related to the maritime domain.

Given the large amount of established maritime domain boundaries, and thus the large amount of data, in 2006 the Primorje-Gorski Kotar County began with the establishment of a geographic information system called maritime domain GIS. Over the years, the maritime domain GIS has been supplemented and updated with new data including newly established maritime domain boundaries and concessions.

The existing GIS database of maritime domain boundaries contains the following data:

- determined boundaries of the maritime domain
- textual part of the maritime domain boundaries
- Decree of the Government of the Republic of Croatia and Decision of the competent Ministry
- graphic part of the maritime domain boundary in dwg format
- list of cadastral parcels entering the maritime domain (after the parcellation study on the division of cadastral parcels)
- land registry parcels entering the maritime domain area, rasters required for bases
- maritime domain boundaries in process
- maritime domain boundaries of special purpose ports
- data on unclassified ports
- water supply and sewerage installations on the maritime domain taken over from all utility companies in the Primorje-Gorski Kotar County
- electrical installations, telecommunications, installations from spatial planning documentation

Geographical information system of maritime domain boundaries has been developed in the ESRI Personal Geodatabase platform² compatible with other GIS databases in the Primorje-Gorski Kotar County. [30] Inquiries about the data contained in the maritime domain GIS are most often received from the Municipal State Attorney's Office, municipal courts, local self-government units, harbour master's offices and legal and natural persons. GIS is a quality database that can greatly contribute to better management of maritime domain and a more efficient concession award procedure and should be made available for use by all entities that have a direct or indirect impact on the management of maritime assets.

Since February 2009, certain data from the maritime domain GIS have been made available to the public in a way that it has been implemented in the existing County GIS.

In 2021, the Split-Dalmatia County posted a web application on the county's official website with information about the maritime domain in the area. This includes information on concessions and management plans, and the site provides citizens with the opportunity to report irregularities to inspection services. [31]

Many authors point out the importance of connecting modern methodologies and tools such as GIS tools and models of multi-material analysis in solving specific problems of protection and evaluation of coastal zones. Mladineo [24] emphasizes the importance of programming sustainable development of the coastal area and states that this is the first step in developing a unique model for evaluating coastal areas, which includes establishing the characteristics of the coast, i.e. ranking the quality (soundness) of the coastal area according to its natural characteristics. He emphasizes that it is very important, in the first step, to recognize all human interventions (e.g. construction of infrastructure) in the natural system as possible consequences of urban development.

According to Kovačić, the fact is that the maritime domain management system in Croatia lacks transparency and awareness of the importance of valuing this exceptional resource. [18]

This is due to the fact that citizens are often unaware of the rights and restrictions that concessionaires have on the coast and on other issues related to the management and use of maritime domain. Therefore, the initiatives of the Primorje-Gorski Kotar County and the Split-Dalmatia County are a big step towards valuing the maritime domain by using available tools and informing the public that it is a particularly valuable resource.

6. Proposal of measures for the improvement of the procedure for determining the maritime domain boundaries

The problem of lengthy and complex procedure for determining the maritime domain boundaries, which included the transfer of decision-making powers to the

² A personal geodatabase is a Microsoft Access database that can store, query, and manage spatial and non-spatial data.

Commission for Boundaries of the competent Ministry, as well as simplifying the border determination procedure was attempted to be solved by the adoption of the MDSA. The unsystematic approach was addressed through the establishment of the obligation to adopt annual plans for the management of maritime domain. [14]

This did not prove as successful, as the procedure still takes longer than prescribed by the MDSA, and requires significant financial resources. The Ministry Commission in its work encounters a number of problems, just like the county commissions when drafting the boundary proposal.

Due to unclear and incomplete regulations, it is not uncommon for the maritime domain to include areas that are not and should not be in the legal regime of the maritime domain, such as a tourist camp located in the vicinity of the sea. Therefore, it is clear that the adoption of the new law should correct some of the already established boundaries. The establishment, control and protection of maritime domain would bring immeasurable advantages and direct and other benefits to Croatia.

The authors are of the opinion that the new Maritime Domain and Seaports Act should ensure faster and simpler registration of maritime domain. It is especially important to prescribe clear criteria for establishing the maritime domain boundary as well as the content of the decision on establishing the maritime domain boundary. The absence of objective criteria that would be used in determining the maritime domain beyond the legal minimum of six meters leads to the application of subjective criteria by the commission, to a greater or lesser extent and raises the question of free interpretation of the legal norm.

The fact is that the registration of maritime domain is optional except when granting a concession. The consequence of the non-obligation to register creates legal uncertainty and the fact that a large part of the Croatian coast is not registered in the land register at all. The authors believe that the registration of maritime domain in the land register should be mandatory, primarily because it is of interest to the Republic of Croatia, and without the registration, maritime domain could be the object of sale and other ways of acquiring property rights and other real rights.

In order to sustainably manage and protect the coastal area, it is necessary to establish an effective management system that would include the activities that take place in that area. An IMD that includes the sea and coastal data in its structure is essential for countries bordering the sea. A large number of maritime states are exploring different approaches to better coastal zone management, especially maritime domain, often using spatial technologies or spatial data management tools. At the same time, some of the main problems are the lack of institutional willingness to share data as well as the lack of common standards and policies applicable to the coastal area and the marine environment.

7. Conclusion

The Republic of Croatia has a number of positive regulations that contribute to the protection of one of the most valuable natural resources, which, along with the establishment and registration of maritime domain boundaries, enables quality and organized valorization and thus the protection of the domain. Still, many authors warn and oppose the expansion and narrowing of boundaries due to imprecise regulations that result in improvisation of state and regional administrations that conduct the procedure and establish the maritime domain boundaries.

The paper presents the procedure for determining the maritime domain boundary and the inclusion of modern technologies in the procedure in order to accelerate the preparation of a geodetic study. Although the establishment and adoption of boundaries is complex and time-consuming, there are visible changes in terms of recognizing the importance of maritime domain, even if it is only declarative.

Despite the network of legal regulations and numerous strategic and planning documents, Croatia is not ready to properly evaluate and protect the maritime domain. The authors advocate the adoption of a new MDSA and the establishment of clear criteria in the process of determining the maritime domain, as well as uniformity in the procedure and shortening the entire procedure. Maritime domain is an overriding resource that cannot be addressed by different institutions and levels of government, but should be the subject of a separate legal institution (agency) that will consolidate and shorten the procedures and ensure more efficient management.

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