Characteristics and Dynamics of the Latvian, Lithuanian and Egyptian Marine Cadastre

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Key words: Marine Cadastre; Maritime Cadastre; Marine Information System; Maritime Spatial Planning; Blue Economy; Blue Growth

SUMMARY

Most countries throughout the world directly border on seas and oceans, which implicitly imposes on them new responsibilities and specific tasks. In this respect, among internationally accepted solutions that have put views and ideas into practice stands the United Nations Convention on the Law of the Sea (UNCLOS).

In our case, we compare policies on the marine/maritime cadastre (marine information system) among Latvia, Lithuania, and Egypt through the lenses of global ocean governance and the internationally recognized perspective of the European Union Integrated Maritime Policy. This policy is based on cross-cutting aspects such as Blue Growth and maritime spatial planning, which have a sound regulation framework at both the regional level and the sea basin level. However, at the same time, much is determined by each country's geographical location, their neighbouring countries, and their possibilities and ability to cooperate. The maritime cadastre is also nothing more than realization of good practice in accordance with accepted standards and international guidelines.

Each region has its own leaders in the field, where co-operation is developed and enshrined in law. Other factors include successful interaction between different institutions and the level of support from both professionals and the wider public. In this case, our focus is on ecological, green development, and further development plans at sea. Items under the microscope include development of wind farms, other environmentally friendly energy, protected areas, traditional coastal fishing, fish resources, tourism, the natural landscape, along with many other issues.

We look at existing developments in each of the three countries covered, solutions with technically fixed parameters, as well as plans and further development for growth of the maritime cadastre in our shared digital world with its geographic information systems (GIS), augmented reality, and innovations. We also embrace planning and growth in terms of the Marine Spatial Data Infrastructure (MSDI), which includes high-precision measurements at sea and from space.

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1. INTRODUCTION

As the oceans make up 70% of the planet, a quote from the English writer Arthur Charles Clarke used as a motto by the European Union's (EU) Green Paper, the EU's vision for an Integrated Maritime Policy (IMP), sounds apt: "How inappropriate to call this planet Earth when **it is quite clearly Ocean** (authors' highlight)" (CEC, 2006). Two oceans and four seas: the Atlantic and Arctic Oceans, the Baltic Sea, the North Sea, the Mediterranean Sea, and the Black Sea make up Europe's coastline of approximately 70 000 kilometres (CEC, 2007a).

In the EU, three categories – namely, governance issues, legal issues, and spatial information issues – which are also key issues in development of a marine cadastre (Ng'ang'a et al, 2001), are being addressed through establishment of a coherent, holistic, and synergistic IMP in 2007 (CEC, 2007a). The IMP aims to offer a more consistent approach to maritime concerns, with better cooperation across policy sectors (EC, n.d.). Blue Growth (also known as the Blue Economy), marine data and knowledge, maritime spatial planning (MSP), integrated maritime surveillance, and sea basin strategies are five cross-cutting programmes under the IMP that rely heavily on research and innovation (EC, n.d.). This approach fits Sustainable Development Goal (SDG) 14 of the United Nations (UN) 2030 Agenda for Sustainable Development titled "Life Below Water", which includes conservation and sustainable use of oceans, seas, and marine resources in line with its targets (UN, 2015).

As summarized elsewhere (Neimane et al, 2021a), the concept of a marine cadastre is well known. Moreover, both research and practical work (at least in test mode) have been undertaken in this area in several countries, such as Israel, Indonesia, Malaysia, Trinidad and Tobago and, more recently, in European countries such as Belgium, the United Kingdom, Germany, Sweden, Poland, Greece and France. This concept is already particularly well developed in Canada, the United States, Australia, New Zealand, and the Netherlands. However, the surprising results of a recent study – "Smart Cadastre: Shaping the future" (2020), a survey of the institutions responsible for cadastre in the member states of the Committee on Cadastre of the European Union (PCC) and EuroGeogprahics – show that only two respondents recognize the real estate cadastre as "highly relevant" to achieving SDG 14, with six respondents seeing it as "somewhat relevant" plus two "don't knows", six other respondents considering it "not at all relevant" and finally eight as "rather not relevant."

In this regard, we use case studies from three countries – Latvia, Lithuania, and Egypt – comparing their policies on marine cadastre (marine information system) effects resulting from their advancement of MSP, considerations of Blue Growth and the fact of belonging to a particular sea basin.

2. DEVELOPING GLOBAL OCEAN GOVERNANCE AS A FRAMEWORK FOR ADVANCING THE MARITIME CADASTRE

Many countries around the world have direct sea and ocean borders, which entail unique duties and demands. In this regard there are internationally recognised solutions, points of view, and a variety of concepts, such as the United Nations Convention on the Law of the Sea (UNCLOS) – "the overarching 'constitution' governing all activities at sea" (EC/High Representative of the Union for Foreign Affairs and Security Policy, 2019, p. 2).

UNCLOS consists of a set of rules that govern use of the ocean environment and its resources, as well as rules that define the legal status of different marine spaces, oversee fulfilment of states' rights and obligations in marine areas, and serve as the foundation for developing a global ocean governance framework (Pyc, 2019). However, it should be clearly stated that UNCLOS contains no *expressis verbis* requirements relating to global ocean governance or MSP (Pyc, 2019). As a result, ocean space planning has become a natural progression of the structuring of obligations and use of rights allowed by UNCLOS, as well as a practical tool in aiding state parties to comply with their commitments (Pyc, 2019).

2.1 Introduction of maritime spatial planning (MSP)

With the aim of establishing a coherent, holistic, and synergistic policy framework for maritime affairs while at the same time supporting the growing international discourse on integrated maritime governance, implementation of the EU Integrated Maritime Policy (IMP) Blue Paper and its Action Plan was launched in 2007, providing a framework for an integrated regulatory approach at all levels and horizontal planning and development of cross-cutting policy instruments (CEC, 2007a, 2007b). Within IMP, MSP was identified as one of the key areas for legal certainty (EC, 2021b): "a key planning tool for sustainable decision-making [...] of marine areas and coastal regions, and for the restoration of Europe's seas to environmental health" (CEC, 2007a, pp. 5–6). The IMP was complemented by other important documents, such as guidelines for an integrated approach to maritime policy (CEC, 2008b), an MSP roadmap setting out 10 MSP guiding principles and developing a common approach to MSP for Member States (CEC, 2008a) and the international dimension of the IMP (CEC, 2009b).

Adoption of the Marine Strategy Framework Directive (2008/56/EC), which also highlighted the diversity of maritime regions, served as a facilitator for further implementation of MSP as a cross-cutting instrument of IMP (CEC, 2009a). On that basis, in 2014 the European Parliament passed Directive 2014/89/EU establishing a framework for maritime spatial

planning (MSP Directive), requiring Member States to develop maritime spatial plans by 31 March 2021.

At the time of adoption of the MSP Directive, only three of the EU's 23 coastal Member States had documents that could be equated with a maritime spatial plan (VASAB Secretariat, 2021). Now, despite the heterogeneous situation regarding adoption of maritime spatial plans in the EU, according to Felix Leinemann, Head of the Blue Economy Sectors, Aquaculture and Maritime Spatial Planning Unit at the European Commission, the most significant feature in this area is that the importance of the maritime issue is now embedded in both political and public processes (VASAB Secretariat, 2021).

2.2 New era of Blue Growth

In parallel with MSP development, according to the 2012 IMP Progress Report (EC, 2012b), the second phase of the IMP was launched by growth in the maritime sectors, seeking to align economic activities within the various sectors with the requirements of EU nature protection legislation. In 2012, the Blue Growth Strategy was adopted as the maritime dimension of the Europe 2020 strategy (EC, 2012a) and highlighted areas where sustainable growth and employment had been planned.

Nowadays the most frequent categorisation is the division into established sectors (e.g., offshore wind, port activities and coastal tourism) and emerging and innovative sectors (e.g., desalination, the blue bioeconomy, and biotechnology) (EC 2021a, 2020). Additionally, the European Commission's Communication on the Blue Economy "Transforming the EU's Blue Economy for a Sustainable Future" (2021d) forms part of the EU's efforts to reaffirm the vital role of the Blue Economy, to link green and blue policies and to shift the focus from *Blue Growth* to a ***Sustainable*** *Blue Economy*.

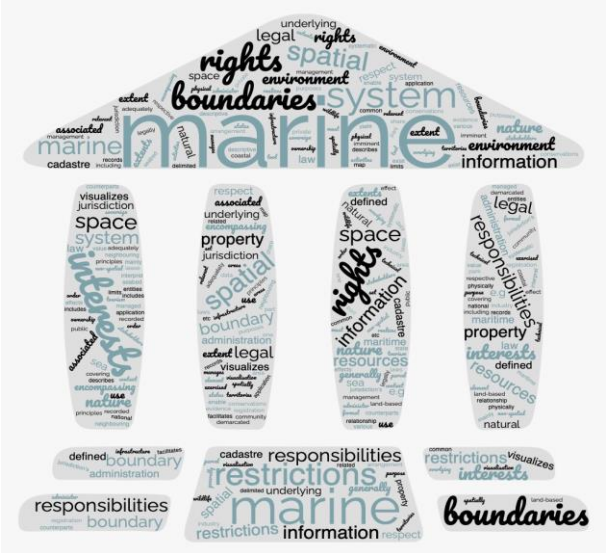
As a result, the rapid development of MSP and diversification of the sea's uses over the last decade, culminating in adoption of first-generation maritime spatial plans (in most cases) has ushered in a new era that adds an unprecedented dimension to the maritime cadastre. In line with UNESCO/IOC (2021) conclusions, this means that the development of MSP has increased the importance of the marine cadastre as a management tool.

3. NATURE OF THE MARINE/MARITIME CADASTRE

Based on previous research, the authors start from consideration of the marine cadastre as a Multipurpose, Multidimensional and Interest-Driven Marine Cadastre (MMIMC) (Neimane et al, 2021a), which, among other things, promotes sustainable Blue Growth. However, it is useful to look at definitions of the marine cadastre, which reveal both the various dimensions of this concept and its very essence (Figure 1).

Analysing the content of the best-known definitions of the marine cadastre (Grant et al, 1999; Robertson et al, 1999; Nichols et al, 2000 after Astor et al, 2017; Ng'ang'a et al, 2001; United

States Department of Communication – National Oceanic and Atmospheric Administration, 2002 after Tamtomo, 2004 and Astor et al, 2017; Ashraf, 2004 from Abdullah et al, 2017; Binns, 2004; Ng'ang'a et al, 2004; Nichols et al, 2006; Vaez, 2009 from Astor et al, 2017; Arvanitis et al, 2016, based on Zentelis, 2011), the authors conclude that the most common characteristics of these definitions are **boundaries** and the **3Rs**, namely, rights, restrictions, and responsibilities (Figure 1), especially in the light of diversification of uses, including ownership, concessions, leases, fishing rights, permits for windmill building and sand excavation, and other rights (Wouters, 2020). This finding is in line with previous conclusions that "[t]he objective behind the development of a marine cadastre is to provide a comprehensive spatial data infrastructure whereby rights, restrictions and responsibilities in the marine environment can be assessed, administered and managed" (Collier et al, 2001). Elsewhere (Sutherland, 2005) it has been noted that "[a] marine's cadastre primary focus is the recording of rights, interests, restrictions, and responsibilities in relation to marine spatial extents."



Source: authors' production based on wordclouds.com.
Figure 1: Definitions of marine/maritime cadastre.

In this regard, the authors would add that the dimension of the 3Rs needs to be particularly underlined, in particular with regard to the wider application of the multi-use principle at sea (see more, e.g., Neimane et al, 2021b). The authors assert that the right approach would be to define the marine cadastre as Multipurpose, Multidimensional and 3Rs-Driven. Another dimension to add here would be Use-Oriented since in today's context the main purpose of and justification for introducing the marine cadastre is Blue Growth and different uses associated with it, as explored earlier.

Hence, the authors assert that the public issue in the visionary approach to sea management at national and local levels consists in establishing a Multipurpose, Multidimensional, Rights-Restrictions-Responsibilities-Driven and Use-Oriented Marine Cadastre. Another remark should be made here, namely regarding the semantic distinction between use of "marine" (with its more environmental focus) and "maritime" (with its more economic focus) perspectives. These terminological differences have considerably influenced definitions and the rationale of MSP when denoting the notion as "**marine** spatial planning" or "**maritime** spatial planning." UNESCO's approach (which uses the term "marine") focuses on the ecological and environmental challenges encompassed within such planning, whereas the European Commission's traditional approach (which uses the term "maritime") translates into minimizing conflicts across maritime sectors (Ehler et al, 2019).

Given the crucial role of the 3Rs in constructing the maritime cadastre in relation to today's diverse uses of the sea, the exact designation of the maritime cadastre in the future might be as follows: a Multipurpose, Multidimensional, **3Rs-Driven and Use-Oriented Maritime** Cadastre.

4. PERSPECTIVES FROM SEA BASIN LEVELS AND NATIONALLY

The Marine Strategy Framework Directive (2008/56/EC) introduced the concept of maritime regions, among which are the Baltic Sea and the Mediterranean Sea. The Baltic Sea is the largest expanse of brackish water in the world, semi-enclosed and relatively shallow, covering about 149,000 square miles (386,000 square km) (Couper and Mutton, 2019). The Mediterranean Sea – an intercontinental, nearly landlocked sea that connects Europe and Africa, stretching from the Atlantic Ocean to Asia in the east – has been referred to as the "cradle of Western civilization." The Mediterranean Sea, which includes the Sea of Marmara, covers over 970,000 square miles (2,510,000 square km) (Boxer and Salah, 2019).

Developments in these sea basins have varied significantly, influenced not only by their geographical situation and the conditions of the marine environment, but also by the geopolitical composition of coastal states, their socio-economic situation, and uses of the sea, as well as their ability to agree on common steps in regional maritime governance cooperation. For example, the EU Strategy for the Baltic Sea Region (CEC, 2009c) with its Action Plan (EC, 2021c) aims to strengthen cooperation between countries bordering the Baltic Sea to address common challenges and take advantage of common opportunities. In that vein, the Baltic Sea region with its 9 coastal countries of which 8 are EU Member States has been a trailblazer in terms of gathering shared MSP experience in a European setting (Frederiksen et al, 2021).

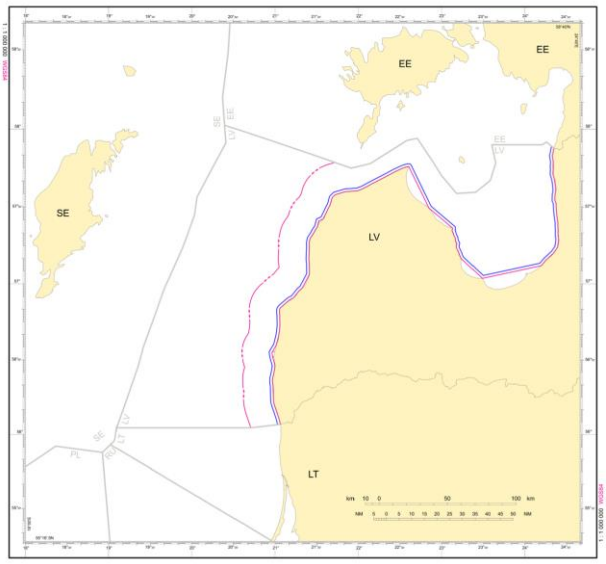
Regarding maritime boundary delimitation, the Baltic Sea has reached a stage that not only resembles, but even surpasses the situation at the start of the 1990s, just before the disappearance of one coastal state in the area, the re-emergence of three others, and the narrowing of the fundamental divide between East and West, as all areas requiring bilateral action have now been covered (Franckx, 2021). Nevertheless, the Baltic Sea is just 400

nautical miles (NM) wide and coastline governments are required to reach delimitation agreements not only with neighbouring states but also with states located opposite them, and the vast majority of these bilateral boundaries have been decided through agreements that have entered into force (except two cases of not fully ratified maritime borders between Latvia and Lithuania and Estonia on the one hand and the Russian Federation on the other) (Franckx, 2012, 2021).

In the Mediterranean Sea, the situation is significantly different from the relatively calm waters of the Baltic Sea with only one non-EU Member State sharing the sea basin. In the Mediterranean, some two dozen separate states – a wide mixture of EU and non-EU Member States – have claims to the waters of this sea, and "many of these are overlapping or disputed leading to an incredibly complex picture of maritime sovereignty" (Wood, 2020). The Mediterranean Sea is divided into western and eastern sections by a submerged ridge that runs between Sicily and the African coast and has a sill depth of about 1,200 feet (365 meters) (Boxer and Salah, 2019). This division is also used for MSP purposes in the EU where the sea basin is divided into the West Mediterranean basin and the East Mediterranean basin.

4.1 Developing the maritime cadastre: Latvian and Lithuanian examples

Latvia has a Baltic Sea coastline of approximately 500 kilometres (km), of which 253 km are the shoreline of the Gulf of Riga (Eberhards 2003; Brunina et al, 2011).



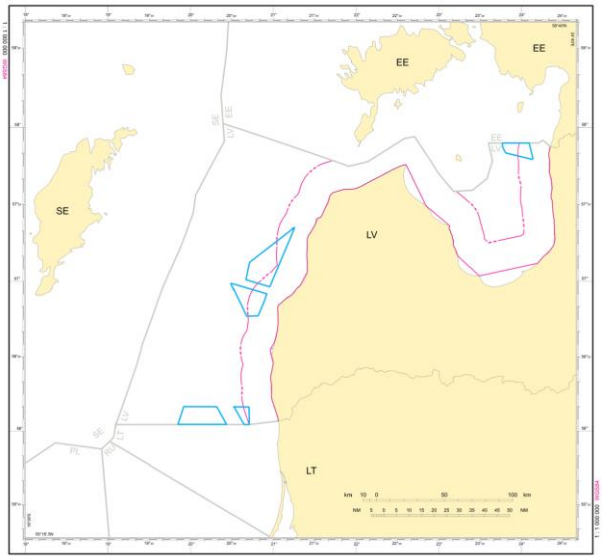
Source: authors' production.
Figure 2a: Boundaries of Latvia – baseline, 2 km zone and the boundaries of territorial waters and the EEZ presented cartographically.

Source: authors' production.
Figure 2b: Boundary of the baseline in nature: Kurzeme Open Sea beach.

Figure 2: Boundaries of Latvia – baseline, 2 km zone and the boundaries of territorial waters and the EEZ presented cartographically (left) and in nature (right).

The Government of Latvia approved the Maritime Plan 2030 for Inland Marine Waters, the Territorial Sea, and the Exclusive Economic Zone (EEZ) in 2019 (Cabinet of Ministers, 2019). Since 2017, Latvia's State Land Service has started to register coastal areas of 2 km in width from the Baltic Sea baseline (Figure 2a) in the Cadastre Information System (Kaminskis et al, 2018; Stamure et al, 2017) which corresponds to marine coastal waters (Land Management Law, 2014, Art. 1, para. 1(7)).

To the best of the authors' knowledge, Latvia is proposing to create a unified system for registration of offshore structures within this framework, complementing the existing land cadastre with marine areas (see also Neimane et al, 2021a). According to the Land Management Law, ownership rights existing on the basis of the law to the marine coastal area are also in effect but without recording them in the Land Register (Art. 16, para. 1), although rights to possession of a marine coastal area forming part of a municipality must be registered in the National Real Estate Cadastre Information System (cadastral system) (Art. 16, para. 3 cf. Art. 15, para. 2).



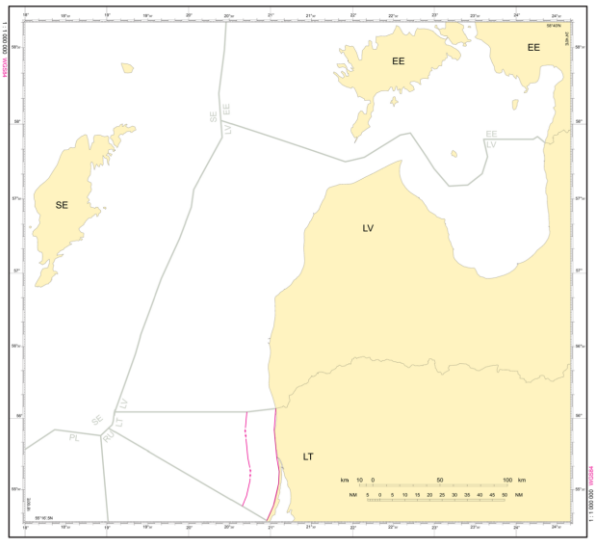
Source: authors' production.

Figure 3: Boundaries of Latvia – baseline, the boundaries of territorial waters and the EEZ with wind farm exploration areas presented cartographically.

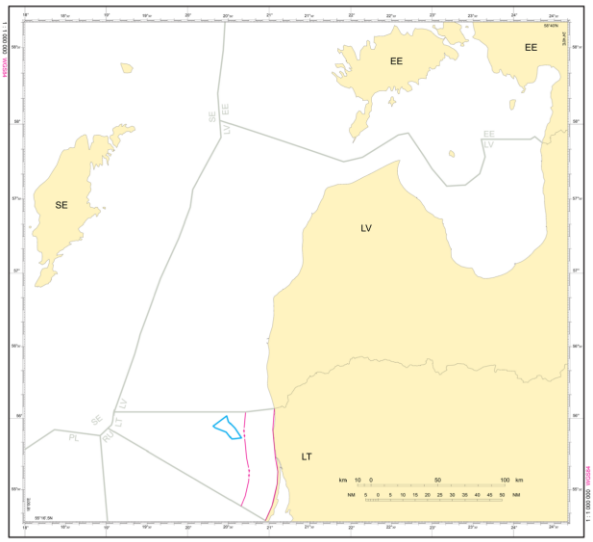
However, a few remarks should be made here. First, in Latvia the cadastral system and the Land Register are not two connected systems, namely, the Land Register is not within the competence of Latvia's State Land Service, which is the responsible authority for the National Real Estate Cadastre Information System (PCC, 2020). Thus, many problems arise in Latvia due to inconsistency of mutual information between the cadastral register and the Land Register (Svemberga, 2012). With regard to the maritime cadastre, the question would be how to register the 3Rs – one possible option would be to integrate them – along with all other information – in the maritime cadastre itself but without involving the Land Register.

Secondly, adopted in 2010, the Regulations of the Cabinet of Ministers No. 779 “Rules for the coordinates of baseline points” stipulate the baseline as shown in Figure 2a. According to the authors’ research, these coordinates cause significant deviations in nature after more than ten years (Figures 2a, 2b). For instance, in several places the baseline bends in the water, and even in some cases is practically on land. In this sense, it would be necessary to update the coordinates periodically, for example once every 3 years.

Thirdly, if it is internationally accepted to use nautical miles (NM) as a unit of distance in the maritime cadastre, then the Latvian National Real Estate Cadastre uses a km scale, which is understandable from a practical point of view. The baseline specified in Regulations of the Cabinet of Ministers No. 779 is used as the reference line for the division of the maritime cadastre. We see this very well in the section from the territory of Lithuania to Kolka on the western tip of the Gulf of Riga. In turn, the course of the baseline in the Gulf of Riga is specific. The 2 km lane differing from the marked red solid line is shown by a solid blue line (Figure 2a). This is also the 2 km zone registered in the cadastre, which covers the entire coast of Latvia. The 2 km zone mentioned in the database is divided into parcels according to the territory of the municipality adjacent to the sea. Consequently, the municipality primarily manages the corresponding adjacent 2 km sea areas and has no say in further territorial waters up to a distance of 12 NM. However, in view of possible use of the sea in the near future (Figures 3, 4b), the information to be included in the cadastre should be considered, covering not only coastal waters but also all territorial waters and the EEZ (Figures 2a, 4a).



Source: authors’ production.
Figure 4a: Boundaries of Lithuania – baseline and the boundaries of territorial waters and the EEZ presented cartographically.



Source: authors’ production.
Figure 4b: Boundaries of Lithuania – baseline and the boundaries of territorial waters and the EEZ presented cartographically with approved offshore wind park.

Figure 4: Boundaries of Lithuania – baseline and the boundaries of territorial waters and the EEZ presented cartographically with and without confirmed planned offshore wind park.

In Lithuania, with about 90 km of maritime coastline (Povilanskas and Urbis, 2004), marine spatial solutions were adopted by the Parliament in 2015 as a component of the Comprehensive Plan of the Territory, extending it by the part on "Maritime territories" (EC/European MSP Platform, 2021). At present, a new Comprehensive Plan was adopted in 2021, since the previous plan expired in 2020; the new plan includes a maritime spatial plan (Ministry of Environment of the Republic of Lithuania, 2021).

According to information available to the authors, in Lithuania, at the moment, there is no specific marine cadastre, but the availability of some marine data is provided (GIS-Centras, n.d.), while in addition some work has been completed in elaborating the future maritime cadastre with the assistance of Swedish colleagues (Kublins and Kaminskis, 2017). At the same time, Lithuania's experience with a comprehensive plan that includes both land and sea is a good starting point to ensure implementation of functional links in the future marine cadastre between sea areas and land (so-called land-sea interactions). At the same time, it should be borne in mind that during the implementation phase of MSP, formal integration of land-based and maritime planning into a single document may prove to be insufficient and that other additional conditions need to be met. However, this is a matter for future research.

At present, wind energy developers in the Baltic Sea Region are actively submitting applications for wind energy sites in an attempt to reserve these sites for future operations (Figures 3, 4b). This is also the case for Latvian and Lithuanian waters. Current development of maritime spatial plans in the Baltic Sea and the prevailing winds in the field of energy in the context of the geopolitical situation in the region suggest that, in today's context, development of a comprehensive maritime cadastre should start with a cadastre of renewable energy sources (especially regarding offshore wind energy infrastructure). This cadastre in its simplest form would be a database in which to register installations used for obtaining energy from alternative sources (cf. Bieda and Cienciala, 2021). Although this concept, which has its early origins in 2010 (Bieda and Cienciala, 2021), is largely extended to onshore renewable energy installations, not least important would be its development offshore and at the point of land-sea interactions.

4.2 Egyptian orientation towards a maritime cadastre

The Arab Republic of Egypt (Figure 5), located in the north-eastern corner of the continent of Africa, has an Asian extension – the Sinai Peninsula. Egypt is bordered on the north by the Mediterranean Sea with a coastline of about 620 miles (1,000 km) in length, and on the east by the Red Sea and the Gulf of Aqaba with a coastline of about 1,200 miles (1,900 km) in length (Goldschmidt et al, 2021).

Egypt is among the East Mediterranean countries that share some MSP-related issues and challenges, such as potential exploitation of submarine natural gas and oil resources, the need for environmental conservation and management action, and the fact that environmental quality is a winning asset for coastal tourism – a relevant economic activity for the East Mediterranean – along with the issue of sustainable management of fisheries and fish stocks,

and an urgent need for cooperation due to the current migratory crisis (European MSP Platform, n.d.). At the same time, interests in undersea oil and gas deposits are also causing tensions and rivalries "creating, sustaining, and exacerbating disputes, both directly and indirectly" among some of the region's coastal states (Baroudi, 2020, p. 5). Therefore, the political term "Eastern Mediterranean" (versus East Mediterranean as used by the European Commission in a geographical sense) has emerged in common language in the last decade to describe such developments as major natural gas finds in Israel, Egypt, and Cyprus in 2009, 2011 and 2015, Russia's intervention in Syria and Turkey's refusal to accord EEZ to Cyprus and the Greek Islands (Makovsky, 2022).

Source: authors' production based on https://en.populationdata.net.
Figure 5: Boundaries of Egypt.

Considering the above-mentioned context, in Egypt water resources and related planning law are fragmentary and scattered. However, there are also several positive developments. For example, in 2020, Egypt launched its National Centre for Spatial Data Infrastructure with the aim of establishing an integrated national planning system (Space in Africa, 2020). The Egyptian government has also instituted the new Suez Canal Corridor Project in response to looming challenges of climate change and in order to achieve the SDGs by ensuring economic improvement, increasing social well-being and preserving marine environmental resources (Shahhat, 2019). In its vision for the UN 2030 Agenda for Sustainable Development, the Egyptian government has stated that industrial and logistics areas, as well as the ports of East Port-Said and Ain Sokhna in the Suez Canal zone, will rely on renewable energy to reduce GHG emissions and replace fossil fuels (Shahhat, 2019). Egypt has also initiated and chaired a cross-regional grouping – the East Mediterranean Gas Forum (EMGF) – with the goal of improving regional cooperation in energy development (Makovsky, 2022).

5. CONCLUSIONS – KEY ISSUES IN DEVELOPMENT OF A POST-2020 MARINE CADASTRE WITH A VIEW TO 2030

Comparing the experience of Latvia, Lithuania, and Egypt in relation to marine governance and marine information system, on the one hand one could assert that the shorter the sea border for each country, the more attention it pays to these issues. On the other hand, however, in today's context, development of the maritime cadastre can no longer be seen only in a narrow national context. Along with UNCLOS, its main drivers are international and regional regimes and instruments, such as global ocean governance, the European Union's leadership in global ocean governance, the European Union's Integrated Maritime Policy with its core elements such as Blue Growth, maritime spatial planning, and sea basin strategies.

Although more experience with use of the maritime cadastre has been discussed in several countries, the examples of Latvia, Lithuania and Egypt nevertheless show that the maritime cadastre is a vision for the future. However, there are differences between these countries, influenced not only by their geographical location and marine environmental conditions, but also by the geopolitical composition of coastal states, their socio-economic situation, and use of the sea, as well as their ability to agree on common steps in regional maritime governance cooperation. Thus, in line with internationally recognized conclusions, the authors underline that development of maritime spatial planning, including diversification of uses of the sea, has increased the importance of the maritime cadastre – marine information system as a management tool.

Therefore, it can be concluded that development of maritime spatial plans is a precondition for the development of a Multipurpose, Multidimensional, **3Rs-Driven and Use-Oriented Maritime** Cadastre. However, it must be borne in mind that the initial planning stages will not bring about a radical change in development of the maritime cadastre. Faster development of the maritime cadastre is expected with the start of wider implementation of economic activities at sea, especially in relation to the broader application of the multi-use principle at sea.

Given the importance of offshore wind energy as a driver for offshore use, it is expected that records of offshore wind energy production infrastructure will begin to build many maritime cadastres. This means that in parallel with these processes, awareness of surveyors, the geodetic community in general and, especially, responsible state institutions, as well as the wider public needs to be raised regarding the rationale for the maritime cadastre. At the same time, attention should be paid to implementation of functional links in the maritime cadastre between sea areas and land (so-called land-sea interactions).

Development of the maritime cadastre should also take into account a number of other important aspects and adhere to internationally recognized standards such as UNCLOS. This would mean the need to apply the internationally applied unit of measurement, the "nautical mile", (instead of "kilometre") and integration in the maritime cadastre of all maritime areas adjacent to each coastal state as territorial waters and EEZ (zoning of UNCLOS), as well as

inclusion of the 3Rs in the cadastre only (without involving land registers) and periodic updates of the baseline.

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ACKNOWLEDGEMENTS

This work is an output of the research project and has been financially supported by the specific support objective activity 1.1.1.2. "Post-doctoral Research Aid" of the Republic of Latvia (project No. 1.1.1.2/VIAA/3/19/514 "Effective Maritime Spatial Planning Regulation Framework and Implementation Challenges and Best Practice Examples for the Context of the Baltic Sea"), funded by the European Regional Development Fund (project No. 1.1.1.2/16/I/001).

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