Research article

Building multiscalar sustainable ocean governance: How do global perspectives interact with the Portuguese national approach?

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ABSTRACT

UNESCO's Intergovernmental Oceanographic Commission launched the United Nations Decade of Ocean Science for Sustainable Development in 2021 to boost global and sustainable Ocean governance. The initiative resulted from historical and political dynamics at the global and lower political scales, with maritime environmental and economic concerns becoming more prominent in 2010. The Ocean Decade's pillars include science and research, sustainability, conservation, and bridging gaps for a global Ocean-Climate-Biodiversity nexus. The Sustainable Development Goals recognized the importance of oceans and marine resources, and the Ocean was officially perceived as a determining factor of Climate Change at CoP 21 in 2015. Portugal has built integrated and far-reaching policies for ocean governance, including significant involvement with an international perspective since the Lisbon World Exhibition in 1998. In addition, the national government established a Ministry of the Sea in 2015 to re-develop relations with its maritime space. This article analyzes and compares the discourse of the United Nations' Sustainable Development Goals reports and the Portuguese government programs (2005–2022) to explore the prominent trends in Portuguese Ocean governance discourse and how global and national perspectives interact. Through this case study, the research aims to develop insights into the multiscalar impacts of promoting global and sustainable Ocean governance and its interaction with national perspectives.

1. Introduction

Lisbon hosted the United Nations (UN) Ocean Conference from June 27th to July 1st, 2022. The conference aimed to discuss proactive measures for the conservation and sustainable use of oceans, seas, and marine resources, focusing on implementing Goal 14 and building solid partnerships for global ocean governance. The selection of this topic highlights the need for a multi-stakeholder and multiscalar approach to ocean governance. Furthermore, Portugal's conference hosting demonstrates its participation in the international ocean-issue agenda. Our paper examines how Portugal's 21st-century public policies align with the UN's proposals and how the country's role evolved in ocean governance.

Although Portugal is a small country with a population of approximately 10.3 million people, it provides a significant case study on ocean issues due to its maritime history, traditions, and unique geographical features. Portugal has a coastline of 2500 km and an exclusive economic zone of 1.7 million km2, making it one of the largest in the world. Additionally, the expected extension of the

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continental shelf is up to 4.1 million km2. With the jurisdiction over 48% of the waters adjacent to the European Union, including the Azores, Madeira, and the mainland triangle, Portugal's position in the European Atlantic pillar is reinforced. Portuguese maritime space constitutes 97% of the nation's territory, representing 4% of the Atlantic and 1% of the global ocean [1]. During the period of maritime expansion, Portugal conducted navigation experiments and identified species unknown in the European context. However, in the 19th century, political and scientific discourses merged, and the King of Portugal, Carlos I, directly supported sea expeditions in 1896 and 1907. Following this first scientific initiative, the Republican Government institutionalized scientific laboratories and created academic research institutes between 1910 and 1921 [2].

Lisbon hosted the last world exhibition of the 20th century, Expo 98, which played a crucial role in internationalizing Portugal's involvement in ocean-related issues. The event theme, "The Oceans, a Heritage for the Future", blended Portugal's historical perspective, in which it played a significant role, with emerging future topics. Rather than celebrating the Portuguese Maritime Expansion, the event aimed to establish a continuity between the historical past, present, and future while emphasizing the importance of conserving the oceans. Despite using a plural form to address ocean issues, Expo 98 highlighted the interconnectedness between people and territories through the sea, stressing the significance of protecting marine ecosystems. The event also incorporated discussions held at the 1992 UN Rio Conference, which focused on ocean issues within a broader context, emphasizing the interconnectivity with the earth's ecosystem survival.

In the same year, the Independent World Commission of the Oceans Report was published, with former Portuguese President Mário Soares (1986–1996) serving as its editor and head of the commission. In the report's preface, Soares acknowledges the multi-use role of the ocean and its multi-scalar governance, viewing it as a shared responsibility for humanity and a place for cooperation and scientific and technological transfer [3]. Furthermore, Soares highlights the global aspects of ocean governance while emphasizing the importance of Portugal within the European Union and as one of the countries with the closest cooperation with the UN regarding ocean governance. The commission aimed to provide a critical and independent reflection on key ocean conservation topics, including peace and security, equity in the ocean, science and technology for the ocean, ocean valorization, awareness and participation, and ocean governance. By the end of the 20th century, Portugal had already participated in global ocean governance by organizing two significant initiatives to raise political and social awareness about ocean conservation and biodiversity.

Portugal consistently prioritized ocean-related topics, such as connectivity, during its presidency of the Council of European Union (1992, 2000, 2007, and 2021). It contributes to ocean discourse in the Community of the Portuguese Language Countries. Additionally, Portugal hosted the 2022 United Nations Ocean Conference, reflecting the country's continued involvement in international ocean politics. This political commitment to ocean issues on the global stage is evident in the way Portugal shapes its agenda in international organizations. But what about the domestic level?

In 1983/1985, Portugal established a Ministry of Sea, the first of its kind, during a post-election coalition government between the Socialist Party (SP) and the Social Democratic Party (SDP). The Ministry consisted of two secretaries of state, one for Maritime Trade and the other for the Fish industry. The new governmental organic was a significant development because Portugal faced an economic crisis and had just ratified the United Nations Convention on the Law of the Sea, a landmark in global ocean governance. The Ministry's main objective was to revitalize the Portuguese maritime industry and prioritize the importance of the sea in public policy. However, the Government later dissolved the Ministry, and sea matters downgraded to a secretary of state into another Ministry. It took Portugal 30 years to reinstate a Ministry of the Sea. Finally, in 2015, a new Ministry of the Sea, with a secretary of state for fisheries, was established during a Socialist Party-led government and with a parliamentary agreement with left-wing parties.

Portuguese governments have emphasized the importance of multilateral policies and adherence to UN principles for ocean governance since the 2006 National Ocean Strategy (NOS). Furthermore, Portugal's involvement in recognizing the sovereignty of its continental shelf facilitated more significant interaction between national and international policies. Starting in 2014, Portugal established a political and legal framework for its maritime space, which involved the publication of a new NOS (2013–2020), the enactment of the law establishing the Basis of the Policy for Marine Spatial Planning Management (2014), and the approval of decree-law 38/2015, which detailed the implementation of the previous law [4]. In the 21st century, researchers have published case studies investigating ocean governance and accounting, including in Portugal [4,5]. These studies demonstrate that Portugal is an interesting case study for ocean public policies and the proposal of indicators for measuring ocean planning. However, analysis has yet to be conducted on the intersection of international global governance and foreign policy with Portugal's domestic ocean public policies through discourse.

Hence, the question still needs to be answered: the extent to which international governance principles influence Portuguese public policies for the ocean. While the country's history of maritime expansion once brought the Portuguese people together and justified the call for a brighter future through sea activities, it is still being determined if this trend persisted over the years and across different governments. Moreover, although the official document on the NOS already incorporated international concepts like "green" from the "Green Paper on European Maritime Policy", the connection between "sustainability" and "development", and the significance of the ocean in mitigating climate change, it is uncertain whether these principles have been maintained over time.

As a result, our analysis focused on examining the political programs of the Portuguese Republic between 2005 and 2022, as the first NOS was published in 2006. We also reviewed the texts of the two National Strategies (2006–2016; 2013–2020) and compared them to the UN reports on Sustainable Development Goals (SDG) Goal 14 (Life below water). These reports integrate the legal framework for all marine and maritime activities known as the United Nations Convention on the Law of the Sea (UNCLOS), which has 168 countries and the European Union as parties as of 2021. The Division for Ocean Affairs and the Law of the Sea (UNDOALOS) of the Office of Legal Affairs serves as the secretariat of UNCLOS, providing guidance and support to States. In addition, in line with the 2030 Agenda for Sustainable Development adopted by all UN Member States in 2015, an annual SDG Progress Report is released annually, offering a global overview of the implementation of SDGs with an in-depth analysis of selected indicators for each goal.

As mentioned earlier, we specifically chose to examine the UN SDG Goal 14 (Life below water) reports from 2016 to 2020, roughly corresponding to the period when the Portuguese government had a Ministry of the Sea (2015–2022). Our goal was to analyze these reports, which totaled 1425 pages and contained 452,238 words, of which 38,028 were directly related to the sea. By doing so, we aimed to identify any indications of the trajectory of Portuguese national public policies for the Sea and compare it to the international trend for ocean governance as presented in the UN reports. Our objective was to determine whether the Portuguese government followed international governance tendencies by incorporating them into national policies and whether there was a perspective of multiscalar governance based on the complementarity between national policies and international governance.

Section 2 delves into the specific data we have chosen and details the methods we have employed in our research. Section 3 offers our findings, which stem from an in-depth analysis of both the content and discourse found in the governing programs of Portugal, the NOS, and the reports related to the UN's SDG on the oceans. We wrap up our paper with a discussion of our findings, conclusions drawn from our research, and suggestions for potential areas of study in the future.

2. Materials and methods

2.1. The sources

As previously stated, we focused on Portugal as a case study to examine the national discourse on public policies for the Sea. In addition, we compared it to the international trend in ocean governance found in UN reports. To achieve this goal, we examined three tools made public in recent years: the Portuguese Constitutional Government Programs and Portuguese NOS developed at the domestic level and SDG reports published by the UN since 2016.

The Portuguese Constitutional Government Programs serve as a four-year policy instrument that outlines the strategic public policies for that particular mandate. They reflect the priorities and outcomes identified by the Government and also include a roadmap to comply with the 'Sustainable Development Agenda of the UN, which was developed based on the Strategic Development Plan. To conduct our analysis, we examined the 17th through 22nd Governments of the Portuguese Republic [6–11].

The Portuguese NOS is also relevant to our study since it is a document that guides ocean-related political actions and affirms the government's commitment to protecting the ocean and promoting its sustainable development. These strategies were developed to achieve the goals of the Constitutional Government Programs, and we assessed if they align with global and European commitments, specifically UN SDG 14, "Life Below Water". We focused on the NOS documents for 2006–2016 and 2013–2020, which the Portuguese government published [12,13].

The UN Department of Economic and Social Affairs produces annual reports on the SDGs' implementation progress, highlighting both areas of advancement and areas that require more attention to ensure that no one is left behind. These reports are developed with input from various international and regional organizations and the UN system of agencies, funds, and programs and involve contributions from national statisticians, civil society experts, and academics. To conduct this study, we selected reports published from 2016 to 2020 [14–18].

2.2. Literature review

In this section, we conducted a literature review to gain insight into the discourse and trends in public policies related to oceans. The review helped us understand the production of political discourse on ocean issues, the areas of focus in scientific discourse, and whether they aligned with the concerns of public policies. This analysis allowed us to understand better the maritime discourse framework at both national and international levels. By considering various perspectives, the literature review provided the tools to examine the discourse on oceans at the political level and determine whether and when the national public policies are consistent with international political orientations.

Critical geopolitics has become a required field in the analysis of ocean policy due to the growing use of the sea, territorialization of maritime spaces, and potential for new conflicts. This approach concentrates on the performative role of political discourse in shaping the social and political construction of spaces [19]. Various discourses concerning maritime space exploration, exploitation, governance, and protection contribute to a plurality of discourses. The oceans once considered vast and smooth spaces, now face increased political divisions that do not always align with their ecological borders and boundaries [20,21]. The analysis of these discourses is becoming increasingly valuable in understanding the construction of ocean spaces through the lens of law, politics, aesthetics, and science, which frame how oceans can interact [22]. By focusing on territorialization, we can also understand how the maritime domain can be a peaceful environment where complex realities are deployed. As such, some authors argue that studies that focus only on "environment" or "security" are unidimensional and lack explanatory power when explaining the full range of phenomena that leads to greater control of sea spaces [23].

We utilized content and discourse analysis on official documents from Portugal and the UN to examine the evolving trends in public maritime action. These methods highlight the contextual meaning of concepts and allow for various interpretations of larger text sections. Qualitative and interpretive, they enable us to identify the primary categories of the text and how their integration into the discourse in public policies. This methodology supported us in understanding how concepts like "management" and "sustainability" are being employed to reorganize public maritime action and to demonstrate the continuity sought by those using this vocabulary [24]. Social science researchers can better grasp political phenomena and their evolution by tracking ocean and sea-related vocabulary. The different conceptions of maritime spaces and resources and their translation into politically solvable issues vary and depend on historical, political, and socio-economic contexts. Discourses can offer valuable insights for researchers seeking to comprehend maritime

policies, particularly when multiple actors [25], unsettled meanings, or policy discrepancies are involved [26]. Additionally, studying sea-related vocabulary in public discourses can aid social science researchers in understanding policies when not expressed clearly, whether in legal or official stances [27].

The methods for conducting discourse analysis can take on multiple forms. For example, studies have been conducted to analyze the discourses and practices of marine and coastal area policies that aim to "green" the blue economy at the national level. These studies also examine how international actors represent and implement such marine policies, which can introduce new processes of territorialization [28]. In political discourses, "oceans" can be a compelling image to mobilize political support. This use of "oceans" appears to be a strategic tool used by public policy actors through their political discourses, as demonstrated by examples such as "The oceans are rising, and so are we" used by the School Strike for Climate movement [29]. Significant events, such as the Lisbon Expo'98 world exhibition, can also fuel public interest in the history and policies of the ocean [30,31]. Therefore, government officials and political actors can strategically use the vocabulary associated with the sea and oceans to justify their controversial political decisions by employing appealing metaphors. For instance, former Portuguese Prime Minister Pedro Passos Coelho used this strategy between 2011 and 2015 to justify austerity policies to the Portuguese people [32]. In a broader sense, the ocean is represented through scientific and political events, such as visual representations like maps that can communicate specific interpretations and solutions [33].

Discourses related to the ocean can vary significantly, even at the level of individual municipalities [34]. They may reflect a multi-scalar approach that considers various dimensions, including spatial, temporal, jurisdictional, and institutional aspects, and their cross-scale dynamics [35]. This approach can help identify specific phenomena and areas that require action [36]. Discourses also reflect how political power addresses and frames ocean management issues and how cross-scale interactions are managed depending on the power relations between political actors and other stakeholders [37]. In this sense, public participation in environmental management policies can also shape power relationships and governance approaches in specific ocean spaces [38].

Studying terms such as "oceans" in media and official documents can provide a basis for developing specific political visions and reveal the evolutions, shortcomings, and resistances associated with such views. The vocabulary related to "oceans" can serve as a strategic keystone around which worldviews are developed and studied [39]. Discourse analysis can also shed light on how actors act through conscious and unconscious dynamics. For example, Ziehm [40] highlights the lack of emphasis on the "risk mitigation" concept, while the specific idea of "risk" can be the central objective of discourse analysis, providing insights into ocean governance dynamics and technological developments [41]. Discourse analysis has also contributed to exploring "ocean literacy" topics or rapidly developing maritime activities [42,43].

Discourse analysis is a valuable tool for examining a broad range of ocean-related topics, including the "blue economy", "blue growth" and their intersections with "green" concepts [24,44–50]. It can also shed light on the dynamics of integrated environmental governance, which seeks to break down the traditional silos in which different sectors, including fisheries [51,52], sea-level rise [34, 53], tsunamis [54,55], iron-fertilisation [56,57], and conservation practices [58–60], have been managed. Finally, analysing discourses makes it possible to understand how different questions intersect and the relationships between the discourses of policymakers, scientists, and other ocean stakeholders, such as communities, at both the international and domestic levels.

The study of ocean issues has become more complex with the emergence of new international actors. This new frame led to diversifying discourses on "Ocean" and "Sea" and increased awareness of the need to connect national and international maritime policies. Many social science researchers now view the SDGs as a framework for action and cooperation, believing that resolving maritime conflicts peacefully through international law can lead to better ocean and coastal governance. The Agenda 2030, SDGs, and UN Ocean Decade are critical elements of a "sustainability pathway" for global ocean governance. As efforts are made to formulate governance alternatives, anticipate future trends, imagine desirable futures, and facilitate socially just processes and outcomes, it is crucial to consider a range of stakeholders involved in ocean activities [61].

The study of sustainable objectives has become more interdisciplinary, with research efforts aiming to achieve SDG goals. For instance, "Ocean Health and Human Health in Europe" agendas have been introduced to tackle various issues across sectoral and disciplinary boundaries [62]. Achieving successful "alignment" of governance processes, as noted by Haas [63], requires coping with overlapping boundaries, varying levels of cooperation, and differing political practices across geographical areas. "Marine spatial planning", a governance tool confined to political practices and maritime spaces, aims to resolve conflicts through technical problem-solving methods, with cooperation being key to its success. Some social sciences studies prioritize multi-stakeholder dialogue and exchange processes that advocate for integrated and complementary public policies that combine SDGs' implementation progress, highlighting politics are also essential for promoting cooperation and achieving global ocean governance goals outlined by the SDGs. Therefore, content and discourse analysis of interviews with "experts" and "stakeholders" are considered valuable methods to identify barriers to cooperation [64].

Regarding the 2020 Ocean Decade and various initiatives led by the UN and other international organizations, there has been an increased focus on understanding the connections between regional, subregional, and global ocean governance. A study of 165 regional agreements has identified 20 regional clusters, raising questions about the unity of global ocean governance dynamics and highlighting the need to examine how global ocean governance adapts to local contexts, institutions, and politics. While some regions lack developed coordination mechanisms, it is essential to determine if these political levels will help or hinder global ocean governance [65]. Therefore, context-specific and situation-specific approaches are being proposed to promote global convergence on political aspects of ocean governance. In addition, capacity building and knowledge development are crucial for analysing power discourses and practices and encouraging better action and cooperation among stakeholders [66].

This research aims to emphasize the importance of a comprehensive approach to sustainable ocean governance. Instead of focusing solely on economic aspects, we aim to offer a more holistic viewpoint. Our primary research question is: How does Portuguese political discourse on marine and ocean issues align with global trends in this area? The answer to this question will show how Portugal

acknowledges the significance of governance that operates on multiple scales, from local to global, in managing ocean resources.

2.3. Methodological approach

The literature review indicates that discourse analysis can play a role in determining if domestic discourses are consistent with international Ocean policies and promoting cooperation at various levels. As previously noted, the chosen texts consist of six programs from the Portuguese Republic Constitutional Governments, two national sea strategies, and five UN SDG reports.

We selected two sets of documents for analysis of Portuguese public policies. The first set covers the period of 2005–2022. It includes the official programs from the 17th Constitutional Government to the 22nd Constitutional Government, which was dissolved by the President of the Portuguese Republic in 2021 and followed by elections in January 2022. The second set consists of the Estratégia Nacional para o Mar (NOS) for 2006–2016 and 2013–2020. It is worth noting that during this time, two different parties governed the Portuguese state: the Socialist Party (18th, 21st, and 22nd Constitutional Governments) and the Social Democrat Party (19th and 20th, the latter being the shortest government since the democratic regime with a duration of one month). Therefore, our analysis will focus on whether there were any significant changes in the ocean public policy outlined in the official government programs. In addition, the literature review highlights the potential of discourse analysis to identify the alignment of domestic discourses with international policies for the ocean and promote cooperation at multiple levels.

We analyzed UN SDG reports from 2016 to 2020 and the Portuguese government's official programs and national ocean strategies from 2005 to 2022. To evaluate the alignment between the two sets of documents and assess whether the Portuguese government incorporated the principles of complementarity in its ocean public policies, we employed content analysis and discourse analysis as proven methodologies in various fields [67–69]. We aimed to identify and compare trends in the texts related to ocean governance. Table 1 displays the periods of overlap between the chosen documents.

After selecting the texts to analyze using text mining, we used content and discourse analysis. For content analysis, we identified the concepts related to ocean governance issues with the highest frequency and created categories for analysis. Then, we investigated which concepts were associated with these categories using Umberto Eco's sign process theory, which explores how the context of signs and semantics explains the function of discourse [70], analysing whether the conversion of international normative contents into Portuguese public policy maintained the discursive assumptions enunciated in the global diplomacy that served as our starting point. It also supported our interpretation regarding the connections between concepts. For discourse analysis, we used Jauss' [71] reception theory to examine any discourse adaptation to the public sphere and if the analyzed categories maintained their conceptual significance. By utilizing both methodologies, we determined if the Portuguese public policies aligned with the UN discourse regarding format, content, and the conceptual significance of the identified categories.

2.3.1. Pre-processing text

The chosen texts were converted electronically and saved as Rich Text Format (RTF) for future proofreading, editing, and pre-processing. Even though the files are ultimately saved as plain text files, it is beneficial to save them in *.rtf format (or other specific word processing formats) because it retains features found in the printed text, such as bolding and italics. After converting the texts to an electronic format, they were carefully proofread and edited, removing extraneous page numbers and manual page breaks. Since diagrams, figures, tables, and other illustrations cannot be processed as text, we removed them from the electronic version of the texts. Although these visuals assist readers in understanding specific trends and behaviours, we did not include them in the analysis. Finally, we also removed the running heads.

Table 1
Timeframe during which the selected documents for analysis overlap.

To prepare the selected texts for analysis, we performed proofreading, which involved spell-checking and global searching to ensure the inclusion of all content. Next, we completed the pre-processing stage, which included four steps: text segmentation, removal of numbers and punctuation, conversion to lowercase, and elimination of stop words. Text segmentation, also known as tokenization, divides the original text into words based on word boundaries such as white spaces [72]. Next, all text was uncapitalized, and numbers, punctuation, and running heads were removed. Finally, we removed trivial or auxiliary words from the end of word pieces to focus on words with meaningful content. These words, known as "stop words," were eliminated since they did not contribute to the analysis. Examples of stop words removed from the Portuguese and English documents included "é", "o", "neste", "além", "id", "assim", "for", "to", "was", "and", "the", "of", and "by". Removing stop words improved software efficiency without affecting text analysis results [73].

3. Results

We utilized Rstudio software to generate our results derived from a content and discourse analysis of specific documents from the Government of the Portuguese Republic (Government Programs and NOS) and UN SDG reports. The selected documents varied considerably in length, and the emphasis was placed on the sea as a topic. Table 2 compares the number of pages, words, and sea-related concepts in each document. For the Portuguese documents, we considered the translated versions of the chosen English words.

Table 2 demonstrates that the Government Programs are lengthy, far exceeding the NOS and SDG reports regarding page count. The SDG report adheres to a standardized template featuring 17 goals, resulting in a slight variation in length between the shortest version (40 pages in 2018) and the most extended version (68 pages in 2020). In contrast, the Portuguese documents lack a rigid structure, as evidenced by the summary and document organization. The NOS, for instance, comprises five chapters and one annex, while the subsequent version (2013–2020) includes six chapters, two attachments, and an appendix. Notably, the government programs vary significantly, with the 22nd Constitutional Government's program needing a document summary to guide readers. In contrast, the 17th Government's program employs headings and subheadings detailed in a six-page summary. The importance of sea-related topics also appears to shift across different government programs. For example, "sea" and "fishing" topics are featured in chapter three of the 17th Constitutional Government's program under sustainable development, disappear in the 18th Government's program, and re-merge in the 19th Constitutional Government's program in chapter three. In the 20th and 21st Government programs, sea-related topics are relegated to chapters six and five, respectively, where the sea is no longer considered an "economic" matter. The perspective on sea-related issues remains unchanged, mainly despite creating a Ministry of the Sea under the 21st Constitutional Government and shifting ruling parties from the SDP to the SP. Only in the 22nd Government's program that the sea regains its importance, appearing in the second chapter's climate change discussion.

The amount of attention given to the sea topic aligns with the purpose of the documents, as evidenced by the NOS from 2006 to 2016 and 2013–2020, which are entirely focused on the sea. In contrast, the Portuguese governing programs and the UN SDG reports only allocate 1%–4% of their content to the sea.

In the subsequent sections, we will present the primary findings for the three document types, which consist of two parts: 1) a word cloud that visually represents word frequency to identify the documents' focus - the more frequently a term appears in the analyzed text, the larger it appears in the generated image; 2) a network of co-occurring words to comprehend the topics related to the primary theme - the sea.

3.1. The Portuguese governing programs

We extracted the words from the 17th to 22nd Government programs with a frequency ranking among the top 21 positions. This process yielded a word cloud shown in Fig. 1, including 26 words from the 17th Government program, 21 from the 18th, and 24 and 23 from the 19th and 20th programs, respectively. The 21st program had the highest number of words (27) in the top 21 positions, while the 22nd program had 24 words included.

Although the word "mar" (meaning "sea" in Portuguese) is always present in all programs, Fig. 1 shows that it became the most

Table 2
Main characteristics of documents analyzed.

| Document	Number of pages	Number of words	Number of words in topics related to the sea
Government Program XVII	162	55.394	949
Government Program XVIII	129	40910	651
Government Program XIX	133	31973	364
Government Program XX	138	46761	585
Government Program XXI	262	69349	3.339
Government Program XXII	196	67149	1.823
NOS 2006–2016	40	12284	12.284
NOs 2013–2020	73	13431	13.431
SDG Report - 2016	56	22134	572
SDG Report - 2017	64	9761	1.254
SDG Report - 2018	40	19847	246
SDG Report - 2019	64	28815	1.263
SDG Report - 2020	68	34430	1.267
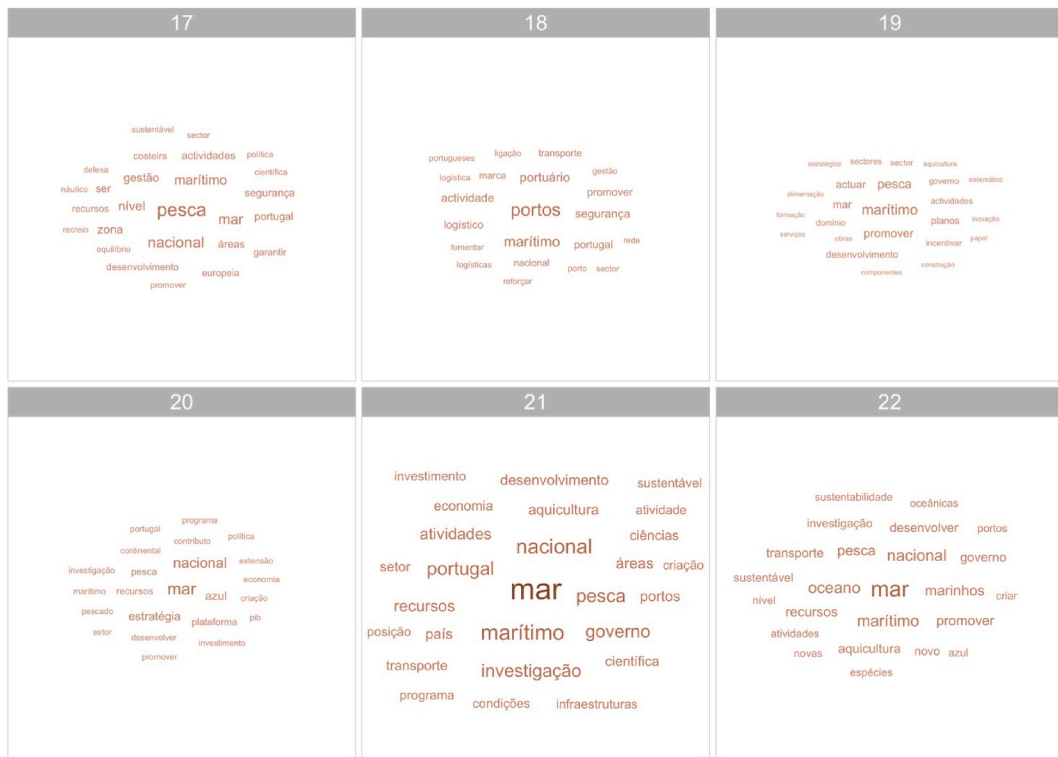
Fig. 1. Word cloud of the Portuguese governing programs.

frequent word in the 20th program. On the other hand, in the 17th and 18th programs, "pesca" and "portos" (meaning "fishing" and "ports") are the most common words, which are conceptually and semantically associated with the blue economy.

To create the co-occurring network of words, we selected some of the most relevant words in this topic, such as "mar" (sea), "marítimo" (maritime), "costa" (coast), "marinho" (marine), "navio" (ship), "oceano" (ocean), "água" (water), "portos" (ports), "pesca" (fishing), "peixe" (fish), "aquicultura" (aquaculture), "milhas" (miles), "náutico" (nautical), "marinas" (marinas), and "pescadores"
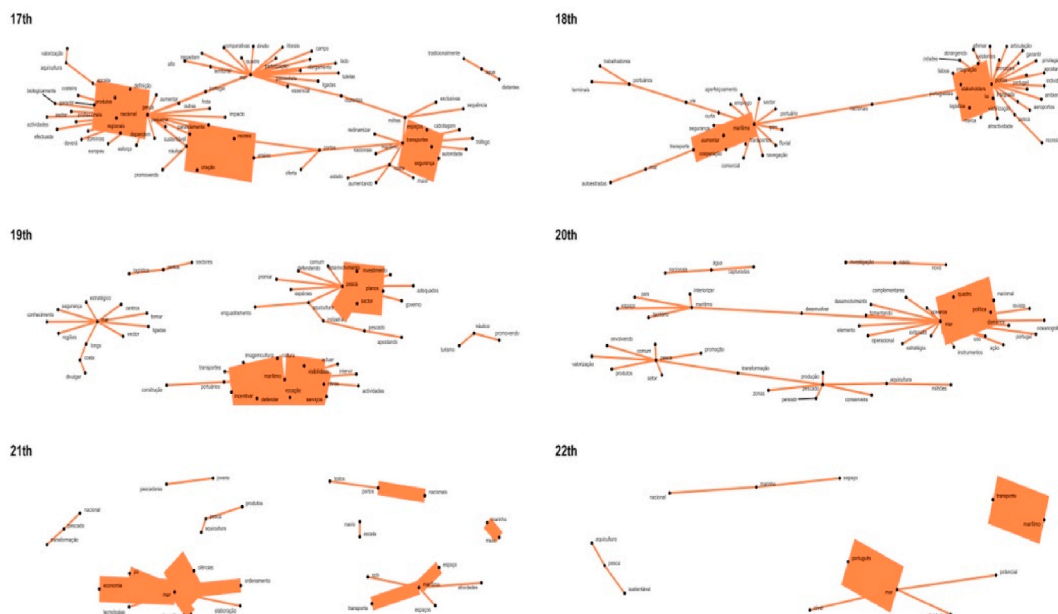

Fig. 2. Network of co-occurring words in the program 17th to 22nd of govern.

(fishermen). For each of these words, we retrieved the surrounding words when they appeared in the analyzed texts, as shown in Fig. 2.

Fig. 2 illustrates the main focus of each government program. The 17th program focused on fishing ("pesca"), the sea ("mar"), maritime security ("segurança marítima"), and nautical teaching ("ensino náutico"). The following program emphasized seaports ("portos") and increasing sea transportation ("transporte maritime"). In the 19th program, fishing ("pesca") resurfaced as a plan ("planos") and sector ("sector"). The program maintained seaports ("portos") and sea transport ("transporte maritimo") but linked them with works and services ("obras" and "serviços"). The 20th government program's main topic of discussion was "fishing" and "fish" ("pesca" and "pescado" in Portuguese) and "national sea" and "sea's public policies" ("mar nacional" and "politica do mar", in Portuguese). In the 21st government program, the relevance of the sea increased with a more comprehensive exploration of the subject. The program included a greater focus on "fishing", "fish", and "fishers" ("pesca", "pescado", and "pescadores" in Portuguese) in addition to "sea" and "seaports" ("mar" and "portos"). Finally, the 22nd program maintained the importance of the sea and sea transportation ("mar" and "transporte maritimo", in Portuguese) and introduced and reinforced the objective of developing "aquaculture" and "sustainable" activities (e.g., "aquicultura" and "sustentável" in Portuguese) from an economic perspective. The trend of highlighting the fishing industry is also evident in the international documents discussed in the following subsections.

3.2. The Portuguese National Ocean Strategy

We chose the most frequently occurring words within the top 30 for both Portuguese NOS documents. It yielded a word cloud with 32 words for the NOS from 2006 to 2016 and 33 words for the NOS from 2013 to 2020, as shown in Fig. 3.

As anticipated, "sea" ("mar" in Portuguese) was the most commonly used term in both documents, but its usage was more frequent in the NOS 2006–2016 document. In the earlier document, the word "national" ("nacional" in Portuguese) appears to have been partly replaced by "Portugal". In the latter strategic document, words such as "development", "resources", and "ocean" ("desenvolvimento", "recursos", and "oceano" in Portuguese) repeatedly appear. Additionally, "national" drops while "Portugal" increases its presence, indicating a shift towards a more complex and international perspective on the role of Portugal in this context.

In the NOS document for 2013–2020, many other concepts related to the central themes of "Sea" and "Ocean" emerge. Fig. 4 shows networks of co-occurring words in each NOS document to provide a more detailed understanding of the discussion around these topics.

The primary terms that have garnered significant attention and discourse in the NOS from 2006 to 2016 are "sea" and "maritime" (or "mar" and "maritimo" in Portuguese), with the term "ocean" ("oceano" in Portuguese) only connected to the first. However, in the subsequent NOS from 2013 to 2020, there was an expansion in the focus on both "ocean" and "maritime," with more in-depth descriptions and numerous references. The concept of "maritime" is further associated with words such as "transportation," "surveillance," "politics," and "tourism" (or "transporte", "vigilância", "política", and "turismo" in Portuguese).

3.3. The UN Sustainable Development Goals reports

Out of the 17 SDGs, we specifically concentrated on Goal 14, titled "Life below water". This goal emphasizes the conservation and sustainable use of our oceans, seas, and marine resources. We chose not to delve into the other goals since they address different issues, like poverty in Goal 1, health in Goal 3, and clean energy in Goal 7.

To gain insights from the SDG reports concerning Goal 14, we created a word cloud based on the frequency of words in documents published between 2016 and 2020. In this process, we pinpointed the top 13 recurrent words. The resulting visualization can be seen in Fig. 5. For context, the word cloud for 2016 contains 19 words, 20 words for 2017, 13 words each for 2018 and 2020, and 17 words for 2019.

The term "marine" was the most commonly used word in the initial three years, followed by "coastal" and "ocean". However, in the 2017 document, "ocean" gained more significance and became the most frequently used word in 2019. In 2020, "fisheries" overtook both "marine" and "ocean" as the most frequently used word. This change reflects the growing concerns regarding the sustainability of

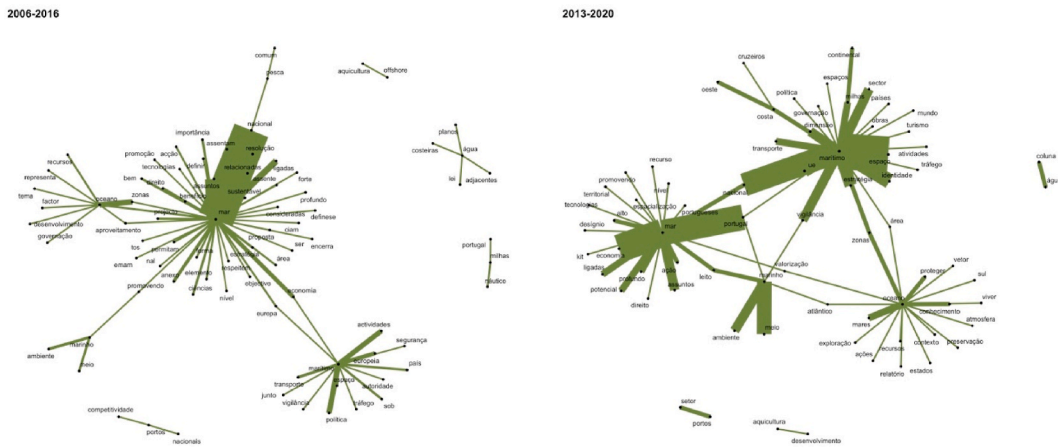**Fig. 3.** Word cloud of the NOS for the period 2006–2016 and 2013–2020.

Fig. 4. Network of co-occurring words in the NOS document for the periods between 2006 and 2016 and between 2013 and 2020.
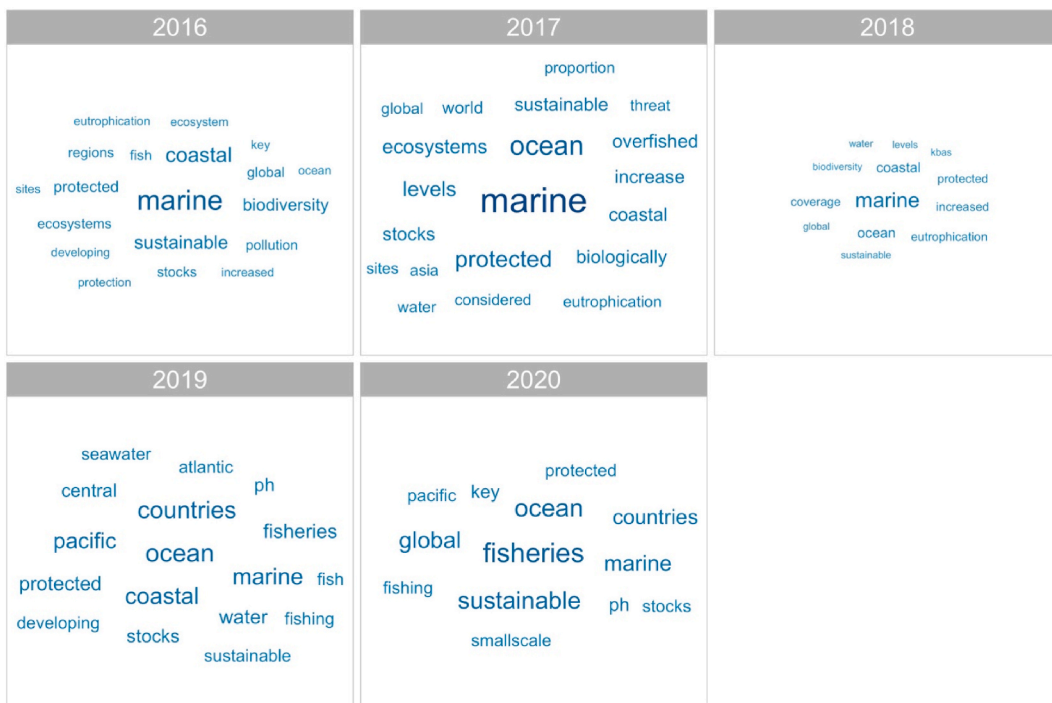

Fig. 5. Word cloud of the Goal 14 discussion at SDG reports for the years 2016–2020.

fisheries from both domestic and international perspectives. The declining fish stocks since the late 2000s and the UN's suggestion to designate 2020 as the International Year of Small-Scale Fisheries are some of the reasons for the increased focus on this topic.

As a result, several other related concepts have emerged. To gain a better understanding of the discussions around these topics, we created networks of words co-occurrence for each UN document, as shown in Fig. 6.

In 2016, Goal 14 of the UN SDG emphasized "marine" as the central topic, with discussions focused on "ecosystems", "environment", and "resources". "Coastal", "sea", and "fishing" were also discussed but evolved differently in the 2017 report. While "marine" remained the main topic of discussion, "coastal" was also explored, and "protected" and "ecosystems" became connected to "marine". "Ocean" gained relevance, particularly concerning "acidification". However, in the 2018 report, the length of the Goal 14 discussion decreased, and the network in Fig. 6 was shortened as well. "Marine" remained the primary topic, followed by "coastal" associated with "eutrophication", while "ocean" appeared separately from "marine". In 2019, "marine" was still connected to "protected" and "ecosystems", while "coastal" reappeared and connected to "regions". "Ocean" was repeatedly associated with "acidification", and "water" emerged as an important topic due to discussions around "quality" and "cleanliness". Finally, in 2020, "fisheries" became the most frequently discussed topic associated with "sustainable" and "fishing," with a focus on "stocks" and "unregulated fishing". The
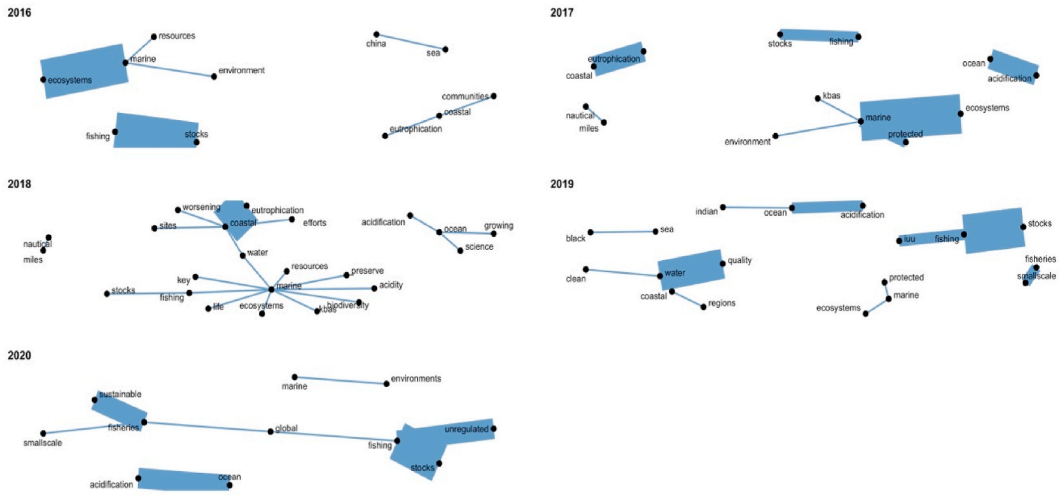
Fig. 6. Network of co-occurring words in the SDG documents for 2016 to 2020.

"acidification" topic splintered the discussion around the "ocean".

3.4. The longitudinal comparison

We present a longitudinal analysis in Figs. 7–9, which compares the most frequently used words in each document. Fig. 7 pertains to Portuguese Government Programs, Fig. 8 represents NOS documents, and Fig. 9 focuses on the UN's Goal 14 section.

Across all documents, there appears to be a growing emphasis on "water" ("água" in Portuguese). We identified the highest frequencies for this term in the 21st and 22nd Government Programs and the NOS documents for 2013–2020. The UN's Goal 14 reports exhibited a similar trend for almost all years analyzed. As for "fish" (as "pescado" in Portuguese), there is an increasing relevance observed in the 21st and 22nd Government Programs, as well as the UN reports for 2019 and 2020, and to a lesser extent in the NOS documents for 2013–2020. While "ocean" was highlighted in the 17th Government Program, its usage decreased in the following Government Programs, only increasing again in the 22nd Government Program and NOS documents for 2013–2020. We also observed this trend in the UN reports for 2019 and 2020. The significance of "coastal" (i.e., "costa" and "costeiro" in Portuguese) does not appear to be aligned in the Portuguese documents analyzed. While its mention decreased in Portuguese Government Programs, there was an increase in the NOS documents. The UN reports saw this topic reach the highest mention levels in 2016 and 2019. Regarding "seaports"
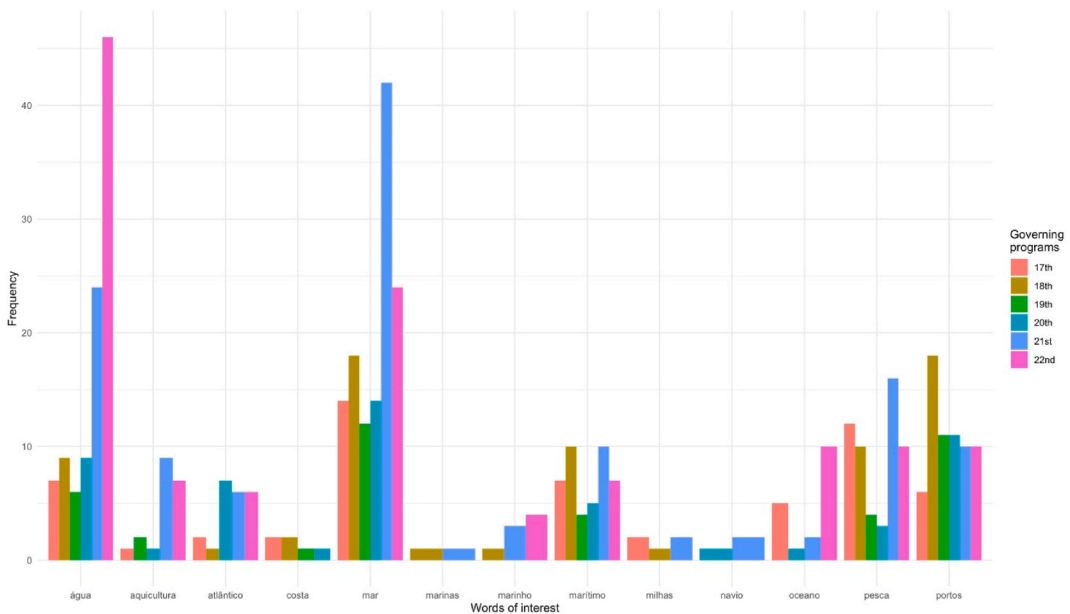

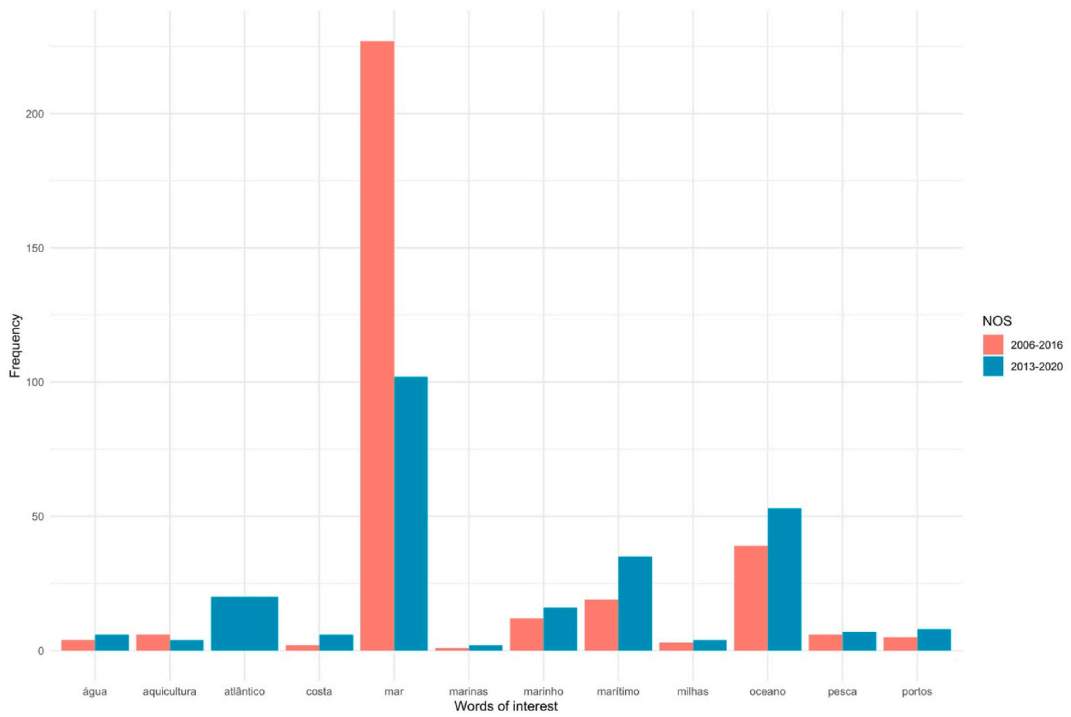**Fig. 7.** Longitudinal analysis of Portuguese Government Programs.

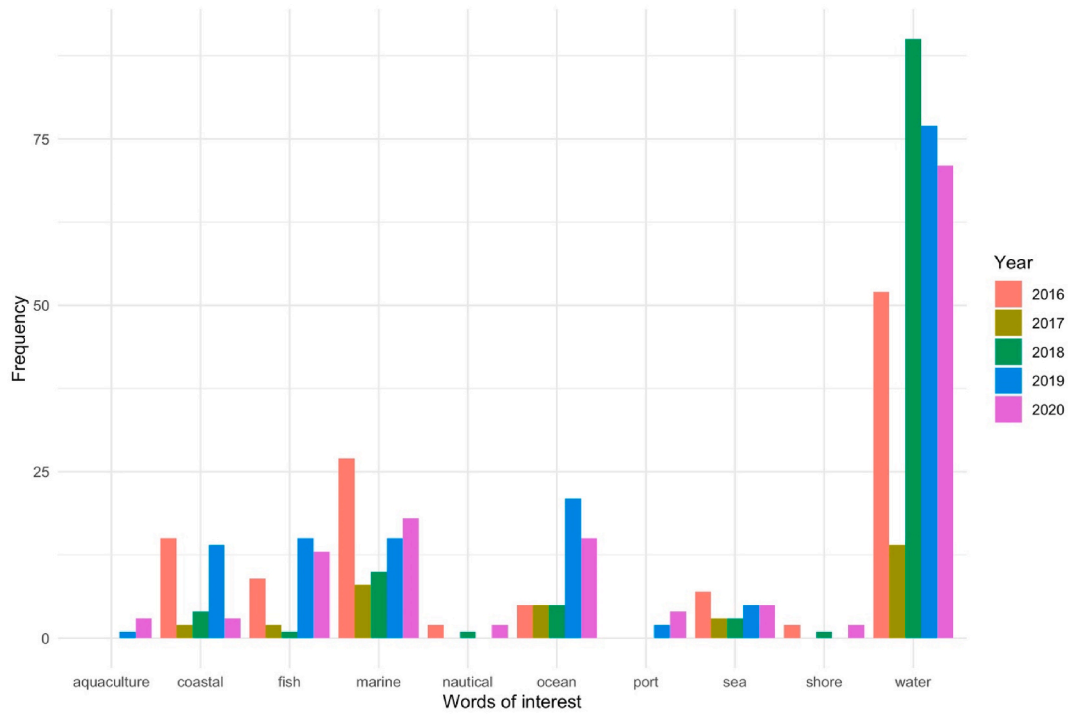**Fig. 8.** Longitudinal analysis of NOS.

Fig. 9. Longitudinal analysis of the UN's Goal 14 section.

(in Portuguese, "portos" and "portuários"), there was a decrease in its mention in the Government Programs over the years but an increase in the NOS documents. However, this topic became relevant for the UN in 2019 and 2020.

4. Discussion

The research methodology employed in this study contributes to tracking political discourses on both domestic and international levels. Regrettably, we have yet to encounter any scientific publications utilizing this approach. Nonetheless, through monitoring political discourses, we have acquired the necessary tools to compare national and international discursive materials related to the Sea/Ocean. This comparison enables us to establish whether there is a similarity or a difference between the Portuguese public policy programs concerning the Sea/Ocean and the global reports published by the UN.

As previously mentioned, we selected Portugal as our case study due to its historical association with the sea as a critical component of its national identity. The Portuguese Constitutional Governments incorporate a group of sea-related concepts, such as tourism, fisheries, maritime transportation, seaports, water, and aquaculture. The government programs also frame sea-related public policies as a critical instrument for the country's development, social cohesion, and improved quality of life. Additionally, two different Portuguese Constitutional governments, one from the SP and the other from SDP, launched the NOS, which reflects the national debate on sea exploration and preservation and outlines the priorities of sea-related public policies after consulting with stakeholders. The UN created a specific area for discussing global and local public policies on the Sea through Goal 14. As a result, UN reports are a valuable resource for observing the sea-related lexical cluster and how the discourse on global governance has developed over time. Consequently, we could comprehensively view sea-related discourses and their interactions and evolution using selected text-mining tools.

The Government Programs at the domestic level have economic and political objectives, while the NOS take a more comprehensive approach to Sea-related issues. By examining specific chapters and sections of text related to the Sea in the Portuguese Government Programs we analyzed, we were able to determine the primary focus of each one. The dominant perspective for a period was economic, with fisheries being the focus of the 17th Government Program, seaports for the 18th Government Program, and seaports and transportation for the 19th Government Program. However, the focus shifted with the 20th Government Program, where the "Sea" became the central topic viewed from a holistic perspective rather than solely from an economic standpoint.

Despite the change in perspective on Sea public policies in the 20th Government Program, it is worth noting that the 18th Government Program already recognized the need to monitor and regulate fisheries for sustainability, not just as an economic activity. As a result, fisheries were already linked to maritime space/territory planning, while the topic of aquaculture only emerged in the more recent Government Programs we examined. Additionally, the 20th Government Program acknowledged the benefits of increased cooperation for the Atlantic Ocean. However, it made almost no reference to the Mediterranean Sea - an evident trend across all the Programs we analyzed. At the political level, multilateralism was embraced, but bilateral relationships were preferred for economic matters. The second NOS document was developed by the 19th Constitutional Government of the Portuguese Republic during the Decade for the Sea, focusing on the blue economy and diversification of sectors. While it incorporated the European Union's sustainability guidelines, it prioritized economic activities per previous trends.

The 20th government of Portugal continued the political direction established in 2011 but added a more intricate perspective on sea issues, linking national objectives with sustainability goals backed by the EU and UN. It emphasized the importance of science, technology, and innovation for the first time. However, this program never took effect due to the one-month duration of the coalition government between the SDP and the Christian Party. The 21st government, led by the SP and supported by left-wing parties based on a parliamentary agreement in 2015, continued some previous trends but associated economic activities with sustainability and protecting marine ecosystems. The 21st government continued the public policies of the previous government resulting from the re-election of SP but had a more pronounced emphasis on the relationship between the ocean, decarbonization, climate change, and other environmental hazards.

The SDG report highlights the importance of the sea and maritime activities in achieving Goal 14, "Life Below Water", and the UN releases an annual report on this topic. The earliest report we examined was from 2016 and focused on the "marine" theme, which aligns with the shift observed in the 21st Portuguese Government Program towards a broader focus on marine issues. The 22nd Portuguese Government Program, released in 2019, aligns closely with the 2019 and 2020 UN reports, not only in the language used but also in the priorities it sets, giving greater emphasis to sustainability and addressing environmental risks concerning one of the most critical sectors of the blue economy, fisheries.

It is noteworthy that despite their global focus, the 2016 and 2017 reports highlight local communities' crucial role in shaping ocean public policies. In 2018, overfishing was identified as a significant global threat, surpassing ocean acidification and eutrophication, which were the most salient terms in that year's report. In 2019, overfishing remained a significant issue, now intertwined with the imperative to develop aquaculture to ensure food security. The 2020 report focused on fisheries as a pressing concern but expanded to cover other blue economies activities such as transportation, tourism, and aquaculture.

The evolution of the concept of "marine" is noteworthy as it has been associated with other ideas, giving rise to new lexical clusters. In the 2016 report, "marine" was linked with environmental threats such as environmental degradation, overfishing, climate change, and pollution, but also with the sustainable development of blue economy activities. The 2017 report emphasized the deepening of environmental threats and the need for effective management of marine resources. The "Ocean(s)" concept highlighted the interconnection between environmental risks and marine economic activities. At the same time, "coastal" was linked to eutrophication concerns and the importance of engaging local communities in developing sustainable fisheries and protection policies. The 2018 report emphasized the direct link between marine public policies and sustainability principles, advocating for the involvement of scientific knowledge. In 2019, public policies were seen as an integral part of a holistic approach to the ocean, connecting

environmental and climate issues with the potential development of sustainable blue economy activities. The concept of "fisheries" gained more significance, emphasizing the importance of biodiversity preservation, monitoring, and regulation. The 2020 report stressed the importance of monitoring through specific indicators as a crucial factor in sustaining the marine ecosystem.

Comparing national documents, such as Government Programs and the NOS, with UN reports reveals that the concepts have evolved significantly. Since 2016, the Portuguese perspective on the Ocean has closely aligned with the UN reports, indicating the potential for increased cooperation and partnerships between the Portuguese state and global actors, like the UN, to establish more effective multiscale governance of the Ocean. It is also noteworthy that the use of the term "Sea" instead of "Ocean" in Portuguese does not represent a significant conceptual difference, as the two terms are used interchangeably, with "Sea" carrying more emotional and identity-related significance for the Portuguese people.

5. Conclusion

Portuguese public policies on ocean governance have strong roots in the country's maritime history, leading to its involvement in resource management and ocean governance. The analysis of Portuguese political discourse related to sea and ocean issues reveals that the country recognizes the importance of multiscalar governance of the ocean and aligns with global trends on the matter. This alignment is evident in the Constitutional Government Programs from 2005 to 2022 and the NOS from 2006 to 2016 and 2013 to 2022, reflecting international discursive ocean issues trends. While there are some differences between the two types of documents, the political principles guiding both are similar, highlighting Portugal's commitment to global policies on ocean governance as evidenced by its political discourse.

Our research has revealed a significant overlap in topics and approaches between the 21st Portuguese Constitutional Government Program and the UN 2016 report. The issues highlighted in other UN reports have also received attention in Portuguese public policy documents. As a result, the methodology employed in our study has effectively addressed our research questions. It can serve as a framework for future research in the Sea/Ocean discourse analysis field. Our methodology can be applied to various case studies and can be used to analyze official documents of other international organizations.

We concluded that the Portuguese Ocean governance discourse primarily concerns two significant themes - economic and environmental/sustainability issues - which seek to reconcile national and global interests. The government aims to balance ocean preservation and the intelligent use of marine resources, thereby positioning Portugal as a trustworthy partner in matters of Ocean governance. This position could help Portugal achieve its goal of extending its continental shelf. Furthermore, the Portuguese discourse is closely aligned with the UN's Ocean policies and principles, with no apparent adaptation or transformation of concepts when transferring international ideas to the domestic discourse. Therefore, our findings suggest that Portugal effectively incorporates the most significant Ocean governance principles into its domestic programs and strategies. This alignment may contribute to the country's ambitions and help achieve its goals in Ocean governance.

In addition to addressing our research questions, our study has several implications for the field, as outlined below.

- It gives readers with an overview of the Portuguese Constitutional Government Programs for the past 17 years.
- It summarizes key trends in public policy related to the field.
- It offers a model for comparing national and global political discourse.

Furthermore, our study may serve as a strong foundation for scholars seeking to expand their collaboration networks, compare the political discourse of other countries or intergovernmental agencies such as FAO, or IFCCC, or conduct qualitative readings to compare specific obligations, goals, and approaches with international standards within Portugal. Finally, our findings can assist new researchers in gaining a better understanding of global trends and key institutions in the field.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author.

CRediT authorship contribution statement

Cátia Miriam Costa: Writing – review & editing, Validation, Supervision, Software, Project administration, Conceptualization. **Ana Teresa Santos:** Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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