water

MDPI

Article

Exploring Integrated Ocean Management Policy in China: Evolution, Challenges, and Prospects

Hao Kong [1,2], Yuqi Zhang [3], Yi Zhang [3], Yao Xu [3,4,*], Gang Zhou [5] and Su Wang [6]

[1] Fujian Provincial Key Laboratory of Coast and Island Management Technology, Fujian Institute of Oceanography, Xiamen 361013, China; hayes234@126.com
[2] Fujian Institute for Sustainable Oceans, Xiamen University, Xiamen 361000, China
[3] Business School, Qingdao University of Technology, Qingdao 266520, China; zhangyuqi2310@126.com (Y.Z.); oucjjxyzy@163.com (Y.Z.)
[4] Business School, Nanjing Normal University, Nanjing 210023, China
[5] School of Economics, Ocean University of China, Qingdao 266100, China; zhougang@ouc.edu.cn
[6] North China Sea Development Research Institute, Ministry of Natural Resources, Qingdao 266100, China; wangsu07@126.com
* Correspondence: xuyao0607@126.com; Tel.: +86-178-64-271-172

Abstract: Integrated ocean management (IOM) aligns with the United Nations' Sustainable Development Goals (SDGs) and serves as a crucial strategy for promoting the enduring health of marine ecosystems and the sustainable utilization of marine resources. An analysis of the evolution of China's integrated ocean management policy (IOMP) is crucial for providing valuable guidance in achieving sustainable growth in marine management and the marine economy for both China and other coastal nations worldwide. This paper studies the evolution characteristics, challenges, and prospects of IOMP in China since 1978 using content analysis. The findings indicate that the evolution of IOMP can be categorized into four stages: the germination period (1978–1998), the construction period (1999–2009), the systematization period (2010–2017), and the strategization period (2018–present), based on the state of international marine management. The IOMP has transitioned over time from its initial emphasis on resource development during the germination period to a strategization period that prioritizes the full development of all parts of the system. However, the ultimate goal has consistently been to achieve harmonious coexistence between people and the sea. China's IOMP has experienced a progressive development; nevertheless, it continues to encounter obstacles such as the pressing requirement to revise sea-related policies and the absence of policy alignment. The objective of this paper is to explore the evolution, challenges, and prospects of China's IOMP to better improve the land–sea coordination policy, strengthen international judicial cooperation. and provide effective policy reference for other maritime countries.

Keywords: integrated ocean management; management policy; maritime power; evolution; challenge

check for updates

Citation: Kong, H.; Zhang, Y.; Zhang, Y.; Xu, Y.; Zhou, G.; Wang, S. Exploring Integrated Ocean Management Policy in China: Evolution, Challenges, and Prospects. *Water* **2024**, *16*, 1673. https://doi.org/10.3390/w16121673

Academic Editor: Rafael J. Bergillos

Received: 8 May 2024
Revised: 7 June 2024
Accepted: 8 June 2024
Published: 12 June 2024

Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

The notion of marine territory in contemporary civilization emerged from the domain of international law, mostly as a result of conflicts between independent nations over the sovereignty of sea areas. The United Nations Convention on the Law of the Sea (UNCLOS), which was approved in 1982, established the boundaries of a nation's maritime territory, including internal seas, territorial seas, exclusive economic zones, and continental shelves, each of which grants the nation certain rights of sovereignty. The UNCLOS created a fundamental structure for the management of the world's oceans [1]. During the Roman era, the sea was considered a shared resource, providing citizens with established rights and liberties to utilize it. Initially, due to limited utilization, marine resources held little economic value. Nevertheless, in contemporary times, the ocean's significance as a bountiful ecosystem has increased, coinciding with people's quest for economic gain [2].

Claus et al. (2014) developed an online database of marine areas, cataloguing global marine geographical names and delineating boundaries of marine biogeographic regions and managed marine areas. This initiative aims to facilitate marine data management, research, and area governance [3].

As marine development and use continue to expand, there is a growing trend in various sea-related activities, such as reclamation. Consequently, issues such as the depletion of marine resources and environmental degradation are becoming increasingly prominent, exacerbating the scarcity of marine resources. Therefore, as early as the 1980s, experts and scholars advocated for the integrated management of marine ecosystems and their resources [4]. However, current marine governance still encounters numerous challenges, including the need to enhance the legal framework, address weak management and law enforcement, improve the efficiency of cross-sectoral collaboration, and establish mechanisms to mitigate interdepartmental conflicts [5]. The IOM approach aims to serve the overall maritime interests of a country. It seeks to achieve the sustainable utilization of marine resources, protect the marine environment, and develop the marine economy through comprehensive and coordinated management. This approach promotes the harmonious development of marine areas, balances the interests of all stakeholders, and fosters the growth of an environmentally friendly economy. Therefore, to address these challenges and achieve the goal of balancing short-term economic benefits with long-term ocean health, countries urgently need to adopt an integrated, ecosystem-based, and science-driven approach to ocean management.

The ocean is a vital component of the global ecosystem and a crucial resource for sustainable human development [6]. China's coastline, characterized by its winding nature, stretches for approximately 32,000 km. Among these, the mainland coastline spans about 18,000 km, while the coastal beach area covers roughly 196,000 km^2. Shallow sea regions with depths not exceeding 10 m encompass over 78,500 km^2, boasting abundant marine resources [7]. Within China, the sea area falls under the classification of marine territory, denoting marine blocks endowed with independent economic value, fixed geographical location, and definable coordinates [8]. The sea area serves as a foundational element for China's marine economy development and national rejuvenation. Consequently, efforts have been made to enhance the efficiency of sea area utilization, foster intensive and sustainable use practices, and optimize the economic, social, and ecological benefits derived from these areas. As a result, China's sea area management system has undergone gradual refinement. The law is the cornerstone of any system, and the stability and sustainability of such a system are ensured by law. The interdependent relationship of institutions, laws, and policies reflects the dynamic nature of the national superstructure, necessitating their collaboration to achieve social stability and development. The establishment of IOM laws and policies ensures the gradual improvement and steady advancement of IOM systems. The "Law of the People's Republic of China on the Administration of the Use of Sea Areas", enacted in 2002, delineated the paid use system for China's sea areas and introduced guidelines for asset-based sea area management. The "12th Five-Year Plan for the Development of National Marine Undertakings" in 2013 mandated activities such as conducting sea area value assessments and promoting the transfer of sea area use rights through bidding, auctions, and listing. In 2016, the "Law of the People's Republic of China on the Exploration and Development of Resources in the Deep Seabed Area" mandated contractors to utilize advanced technologies to mitigate the environmental impact of deep-sea development activities. In 2023, the "Notice of the Ministry of Natural Resources on Exploring and Promoting the Three-dimensional Stratification of Sea Areas" advocated for the implementation of three-dimensional stratification in sea areas, aiming to transition the sea area management paradigm from a "two-dimensional" plane to a "three-dimensional" approach. The exploration of the ocean should be anchored in the development and utilization of marine resources and space, with marine management serving as a crucial pillar for maritime development. Innovative approaches to marine management should span various fronts, including the legal framework governing sea area usage rights and

the overhaul of marine systems and mechanisms, thereby enhancing the efficacy of marine governance [9].

China is one of the leading countries in promoting the idea of integrated sea area management on a worldwide scale. China has actively and systematically pursued the rational development and usage of marine resources since the concept's formal establishment in 1980, while also effectively protecting the maritime natural environment. This undertaking has involved tackling the overarching challenges in sea management and governance while promoting a comprehensive approach to marine governance. Concurrently, China has established a relatively comprehensive integrated management framework encompassing marine policies, laws, planning, and technical standards. Furthermore, there is a continued emphasis on capacity enhancement at national, provincial, and municipal levels to fortify the sea area's comprehensive management system [4]. This paper outlines the evolutionary characteristics of China's IOMP, delves into the challenges it encounters, and anticipates future policy trends.

The Blue Paper on Integrated Marine Management, commissioned by the High-level Panel on Sustainable Marine Economy, was prepared in Xiamen, China, and released on World Oceans Day 2023. In the fourth section, practical cases of IOM are presented, showcasing the integrated coastal zone management model of Xiamen to the global audience and sharing the challenges and experiences of Xiamen's integrated marine zone management [10]. Additionally, Xiamen International Ocean Week has become an annual international event for exchanging global ocean policies, science, technology, decisions, and actions [11]. The management of Yundang Lake has been incorporated into the "integrated coastal zone management" course as part of the Chinese government's foreign aid projects, providing training and experience sharing for over 100 developing countries worldwide. Furthermore, ecological and environmental agencies from the United States (US), Germany, South Korea, and other countries, as well as the European Union (EU), have visited Yundang Lake [11,12]. It holds pivotal significance in guiding the sustainable development of marine management and the marine economy in both China and coastal nations worldwide. Moreover, it stimulates a heightened worldwide focus on measures for governing the world's oceans, thus assisting in the advancement of sustainable practices for the marine environment. Ultimately, it advocates for the establishment of a global consensus on the shared future of the oceans, thus contributing to the achievement of a cohesive global community committed to the welfare of the oceans.

2. Literature Review

2.1. Research on the Paid Use of Sea Areas

As the global ocean economy continues to grow, the ocean has become a crucial driver of socio-economic growth in coastal regions. The marine domain, being a crucial component of the oceans and seas' natural resources, is considered both a public resource and a valuable asset of the State [13]. Therefore, it should be utilized in accordance with the law and subject to appropriate fees for its usage. With the continuous development of the global ocean economy, the ocean area has become an important vehicle for the socio-economic development of coastal areas. To achieve sustainability and conservation goals as described in Sustainable Development Goal 14 and the Marine Biodiversity of Areas Beyond National Jurisdiction (BBNJ), a combination of management tools is necessary [14]. The main reasons for the collection of marine royalties are to ensure the national ownership of marine resources, to collect the costs of marine development and restoration, and to optimize the area of marine use by increasing and adjusting the cost of marine use [15]. China's compensated use of sea areas dates back to the 1990s, promoting their market-oriented allocation to ameliorate efficiency and to achieve their intensive and economical use [16]. In 1993, the Ministry of Finance and the State Oceanic Administration (SOA) jointly issued the Interim Provisions on the Management of National Sea Area Use, which initially clarified the implementation of the sea area use certificate system and the system of paid use in China. In the same year, China implemented a marine royalty system. Marine royalty

systems are considered to be an effective economic tool for securing the remunerative use of maritime areas, with the central feature being the establishment of a system of permits or licenses and fees for maritime use [17]. The Law of the People's Republic of China on the Administration of Sea Area Usage, which was formally implemented in 2002, for the first time clarified in law the property rights of sea areas and resources, the management system of remunerative use, and the system of marine functional zoning [18]. The rate of marine royalties is set at the governmental level. This has led to the beginning of the regularization of the remunerative management of the country's maritime areas.

2.2. Research on the Right to Use Sea Areas

After the establishment of the management system for the right to use the sea, more and more sea users demanded mortgages for the right to use the sea [19]. In 2006, the SOA issued the Provisions on the Administration of the Right to Use Sea Area, which for the first time explicitly referred to a contract for the transfer of the right to use sea areas. In 2007, China's Property Law made it clear that the right to use maritime areas acquired by the law is protected by law, confirming the status of the right to use maritime areas as a usufructuary right [18]. A maritime domain use management system based on maritime domain use rights was established. Li et al. (2019) proposed that the implementation of the management system for the compensated use of maritime areas in China is characterized by the following three features: large-scale compensated use of maritime areas, a rapid increase in the number of payments for the use of levied maritime areas, and an increasing proportion of payments for the right to use maritime areas obtained through market-oriented means [13]. Yu et al. (2023) demonstrated that the transaction system for sea use rights operates as a hierarchical framework within the boundaries of state ownership and the requirement for payment for sea usage and the functioning of the SUR transaction system depend on a combination of government and market mechanisms [20]. Xue et al. (2023) examined the use of IOM to achieve the sustainable development aim by focusing on the marine eco-environment foundation, market mechanism, management support, and space consideration [21]. Wang et al. (2021) investigated ways to enhance the productivity of the marine sector and promote the high-quality development of the marine economy through financial support using the framework of Integrated Land–Sea Management [22]. Wang et al. (2022) conducted a comprehensive review of the historical development and current research frontiers in different marine-related fields. They also identified the challenges in marine economic development and marine management processes. The objective was to find innovative solutions for transforming and upgrading marine development and to enhance the modernization of marine governance capacity [23].

2.3. Research on Reclamation Activities in Sea Areas

Stimulated by large populations and rapid economic growth, coastal areas have developed maritime facilities and coastal industries, thus contributing to the process of urbanization [24]. This growth has led to a shortage of land resources. Frequent outbreaks of marine disasters in the context of global warming pose a serious threat to the sustainable development of coastal areas and the construction of global maritime capitals [25]. The shorelines of beaches undergo dynamic changes due to the processes of coastal erosion, river inputs, and sea level rise [26]. Reclamation—creating new land in the ocean—is a common solution [27]. However, land reclamation can cause the degradation and loss of coastal ecosystems [28], which is also not conducive to the sustainable conservation and management of marine biodiversity [29]. It has been recognized that the integration of marine sciences and coastal management would generate better-formulated marine policies and viable policy implementation strategies which may be utilized to make a significant contribution to coastal management in various aspects [30]. Bai et al. (2024) pointed out that the construction of marine ecological security shelters upholds inter-regional and inter-departmental administrative barriers to the collaborative governance of the marine environment. To establish an effective collaborative governance model,

it is essential to improve the structure and mechanism of governance [31]. Jiang and Guo (2023) proposed that the sustainable management of Marine Protected Areas on the high seas requires legal regimes to support them, though relevant regimes are still immature [32]. Li et al. (2023) showed that China is still in the early stages of developing marine ecological compensation mechanisms, and many problems have been exposed stemming from historical issues and from the institutions exerting strict control over sea reclamation [33]. Wang et al. (2023) considered that port reclamation management models, adaptation strategies to rising sea levels, and ecological compensation systems need to be improved [24]. To mitigate the negative impacts of reclamation, since the end of the 20th century, the Chinese government has issued a series of policies, regulations, and directives to regulate reclamation activities [33–36].

2.4. Literature Summary

The majority of the current literature on marine management in China concentrates on three topics: paid usage of marine areas, the right to use maritime zones, and reclamation activities. These works are categorized and summarized in Table 1. Despite extensive research on marine management, there remains a lack of comprehensive and systematic studies on IOMP. An in-depth examination of China's IOMP holds significant implications for national security, economic development, ecological protection, legal infrastructure, international cooperation, promotion of social awareness, and the summation of historical experiences.

Table 1. Summary of the related studies.

Field	Content	Example	Year	Contribution
Research on the paid use of maritime areas	Strengthening management	Joana et al. [14]	2023	Proposed that a combination of management tools is necessary to achieve sustainability goals.
	Marine royalties	Zhang [15]	2015	The main reason for the collection of marine royalties is to ensure the national ownership of marine resources.
	Marine royalty systems	Yue et al. [17]	2018	Considered marine royalty systems an effective economic tool for securing the remunerative use of maritime areas.
Research on the right to use maritime areas	Mortgage demand	Liu et al. [19]	2016	Demand for mortgages for the right to use the sea emerged after the establishment of a marine management system.
	Legal protection	Yang et al. [18]	2020	China's property law made it clear that the right to use maritime areas acquired by law is protected by law.
	Transaction systems	Yu et al. [20]	2023	Showed that the sea use rights transaction system is a tiered structure under the constraints of state ownership and paid use of the sea.
	Land–sea management	Xue et al. [21]	2023	Discussed IOM for meeting sustainable development goals.
	Maritime development	Wang et al. [22]	2021	Explored how to effectively improve the productivity of the marine industry.
	Review of frontiers	Wang et al. [23]	2022	Identified existing problems in the processes of marine economic development and marine management.

Table 1. *Cont.*

Field	Content	Example	Year	Contribution
Research on the reclamation activities in maritime areas	Improving management	Wang et al. [24]	2023	Considered that port reclamation management model, adaptation strategies to rising sea levels, and ecological compensation systems need to be improved.
	Sea threats	Sui et al. [25]	2022	Frequent outbreaks of marine disasters in the context of global warming pose a serious threat to sustainable development.
	Reclamation activities	Duan et al. [27]	2016	Reclamation—creating new land in the ocean—is a common solution.
	Legal regimes	Jiang and Guo [32]	2023	Proposed the sustainable management of Marine Protected Areas on the high seas requires legal regimes to support.
	Issued policies	Li et al. [33]	2023	Chinese government has issued a series of policies, regulations, and directives to regulate reclamation activities.

3. Evolution of Subjects Responsible for IOMP Formulation

Following the establishment of the People's Republic of China, China has placed significant emphasis on ocean development and utilization. The marine industry has undergone rapid growth, accompanied by the gradual enhancement of the maritime management system, which initially had minimal infrastructure. The reform of marine management institutions has progressed alongside advancements in the deepening of marine development and the deepening of the understanding of marine science. The evolution of the main body of China's IOMP can be roughly divided into four stages: (1) the establishment of the SOA in 1964; (2) institutional reform of the SOA in 1998; (3) reorganization of the SOA in 2013; (4) its incorporation into the Ministry of Natural Resources (MNR) in 2018. Pivotal time nodes of the evolution of the subjects responsible for the formulation of IOMP are depicted in Figure 1.

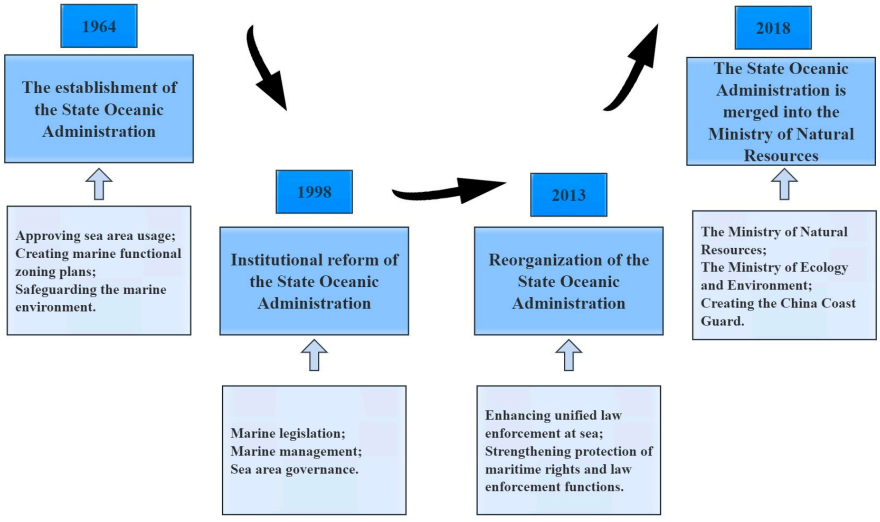


Figure 1. Evolution of the subjects responsible for IOMP formulation.

3.1. Establishment of the SOA

In May 1963, under the leadership of Yelie Yuan, head of the marine professional group of the State Science and Technology Commission, 29 experts convened to discuss

and address the challenges facing marine development in China. They identified four critical issues: maritime safety, inefficient utilization of marine aquatic resources, limited understanding of seabed mineral distribution, and inadequate protection of marine rights and interests. As a solution, they proposed the establishment of the SOA. In February 1964, the State Council of the People's Republic of China (SCPRC) established the SOA to oversee marine affairs nationwide. Subsequently, in March 1965, the SCPRC approved the establishment of branches in the North Sea, East China Sea, and South China Sea, located in Qingdao, Ningbo, and Guangzhou, respectively. As the marine administrative body of the SCPRC, the SOA held a deputy ministerial-level position. Its responsibilities included approving sea area usage, creating marine functional zoning plans, and safeguarding the marine environment. The establishment of the SOA signified the initial establishment of China's IOM system.

3.2. Institutional Reform of the SOA

With the goal of streamlining staff structures, cutting down on the number of ministries and commissions, and merging institutions, the SCPRC launched a thorough institutional adjustment and reform in 1998. Aligned with this objective, the SOA was integrated into the State Bureau under the Ministry of Land and Resources. Its core functions encompassed marine legislation, management, and planning. At the time, China's "integrated management" model for sea area governance was further embodied in the SOA's 1998 institutional reform.

3.3. Reorganization of the SOA

The fragmentation and lack of coordinated management of China's many sea-related departments after the 1980s resulted in overlapping functions and powers, impeding the effective utilization of maritime regions [37]. To streamline functions, clarify responsibilities, enhance the system and its mechanisms, and improve administrative efficiency, China initiated institutional reforms of the SCPRC in line with the directives of the 18th National Congress of the Communist Party of China and the Second Plenary Session of the 18th Central Committee. One of these changes was reorganizing the SOA. The purpose of this reorganization was to enhance unified law enforcement at sea and improve enforcement efficiency. It strengthened marine right protection and law enforcement functions by combining several maritime law enforcement teams, including maritime surveillance, fishery administration, border guard, and maritime anti-smuggling teams. The restructured SOA continued to be overseen by the Ministry of Land and Resources.

3.4. SOA Merged into MNR

Attention gradually turned to the disadvantages of the fragmented management of land and sea, unclear division of responsibilities, and low management efficiency in the marine management system since the 18th and 19th National Congresses of the Communist Party of China advocated for the strategy of adhering to integrated land and sea planning and building maritime prowess [38]. In 2018, China underwent another round of reforms in its central-level marine administrative agencies. After the SOA was disbanded, the MNR was created to assume the majority of its previous duties. This involved managing natural resources, strategic planning, and the marine economy. The former SOA's oversight of marine environmental protection was transferred to the newly formed Ministry of Ecology and Environment. The SOA's maritime law enforcement responsibilities were taken over and the coast guard squad was placed under the command and supervision of the newly established China Coast Guard. This reform marks another significant step in China's marine management system.

As a component of the SCPRC, the MNR assumed the responsibilities previously held by the SOA of China, becoming the new national marine administrative department, a role it continues to hold. A new phase in China's sea area management system was marked by the reform of its marine management institutions, which represented a change

in the country's marine management strategy from "comprehensive management" to "comprehensive and decentralized integration".

4. Evolution of the IOMP

4.1. Method

A quantitative, methodical, and objective way to describe communication material is content analysis. It was developed in the 1950s by the American researcher Berelson and is a method for quantitatively examining different data contents that are derived from qualitative research [39]. It addresses the subjectivity and uncertainty problems inherent in qualitative research by converting language-described content into data represented by quantities and interpreting the findings through statistical numbers [40]. This study employs content analysis to quantitatively analyze IOMP. Due to the non-quantifiability, complexity, and organization of content, IOMP must undergo systematic analysis through content analysis to avoid uncertainty [41], thus revealing its evolutionary characteristics.

We used keywords such as "integrated ocean management", "sea area use fee", and "reclamation" on various official websites such as those of the SCPRC, MNR, Ministry of Ecology and Environment of the People's Republic of China, etc., to obtain numerous policy samples, which were then downloaded for analysis, ensuring that the policy samples were representative. In the selection of samples, we considered their diversity and analyzed all policies related to ocean management to ensure that the samples reflected various aspects and characteristics of IOMP. To avoid subjectivity, we excluded content unrelated to IOM based on established professional vocabulary pertinent to the field. The retained content was then coded chronologically and classified according to the issuing body. There were numerous essential steps in the subsequent research process: First, after coding, classifying, and screening the policy samples according to the content and focus of the policy documents, the retained content was summarized to establish a database of Chinese IOM policy documents. Second, the policies were sorted chronologically by the year they were issued in and divided into four evolutionary stages based on changes in the status of IOM throughout the evolution process. Third, using word frequency statistics and social semantic network analysis of the text content, we analyzed the evolutionary characteristics and challenges of each stage and attempted to forecast future trends for China's IOMP.

4.2. Data

The policy samples for this study were sourced from official websites, including those of the SCPRC, MNR, Ministry of Ecology and Environment of the People's Republic of China, Ministry of Agriculture and Rural Affairs of the People's Republic of China, and Ministry of Justice of the People's Republic of China. For analysis, 76 national-level policy samples from 1978 onwards were chosen. This paper conducted searches on the official websites of coastal provinces and municipalities. Additionally, field research was carried out in Liaoning (Dalian), Shandong (Qingdao, Weihai, Yantai), Jiangsu (Lianyungang, Nantong), Shanghai, Zhejiang (Ningbo, Zhoushan), Fujian (Xiamen, Putian, Fuzhou), Guangdong (Guangzhou, Zhuhai), Guangxi Zhuang Autonomous Region (Beihai), and other coastal provinces and cities in China. Visits were made to provincial and municipal Marine and Fisheries Bureaus and to the First and Third Institute of Oceanography of the MNR. Investigations were conducted on marine-related enterprises to obtain relevant provincial and municipal IOMPs through engagement with government bodies, universities, research institutes, and enterprises. Due to data availability constraints, this study does not include relevant policies from coastal areas such as Hong Kong, Macao, and Taiwan.

The policy samples were processed in the following ways to enable a comprehensive examination of policy content during the investigation of China's IOMP's evolution. First, word frequency analysis was conducted, gathering and organizing the policy text for keyword frequency data using the ROSTCOM6 (Version 5.8.0.603) analysis software. Second, co-word analysis was performed by tallying the occurrences of each pair of keywords within a policy document, thus generating a policy co-word matrix. Subsequently,

utilizing the social network analysis tool ROSTCOM6, a social network diagram depicting the co-word matrix of IOMP at each evolutionary stage was generated.

4.3. IOMP Evolution Stages

To comprehensively illustrate the evolution of sustainable IOMP, this paper categorizes the policy into four stages: the germination period (1978–1998), the construction period (1999–2009), the systematization period (2010–2017), and the strategization period (2018–present), as depicted in Figure 2.

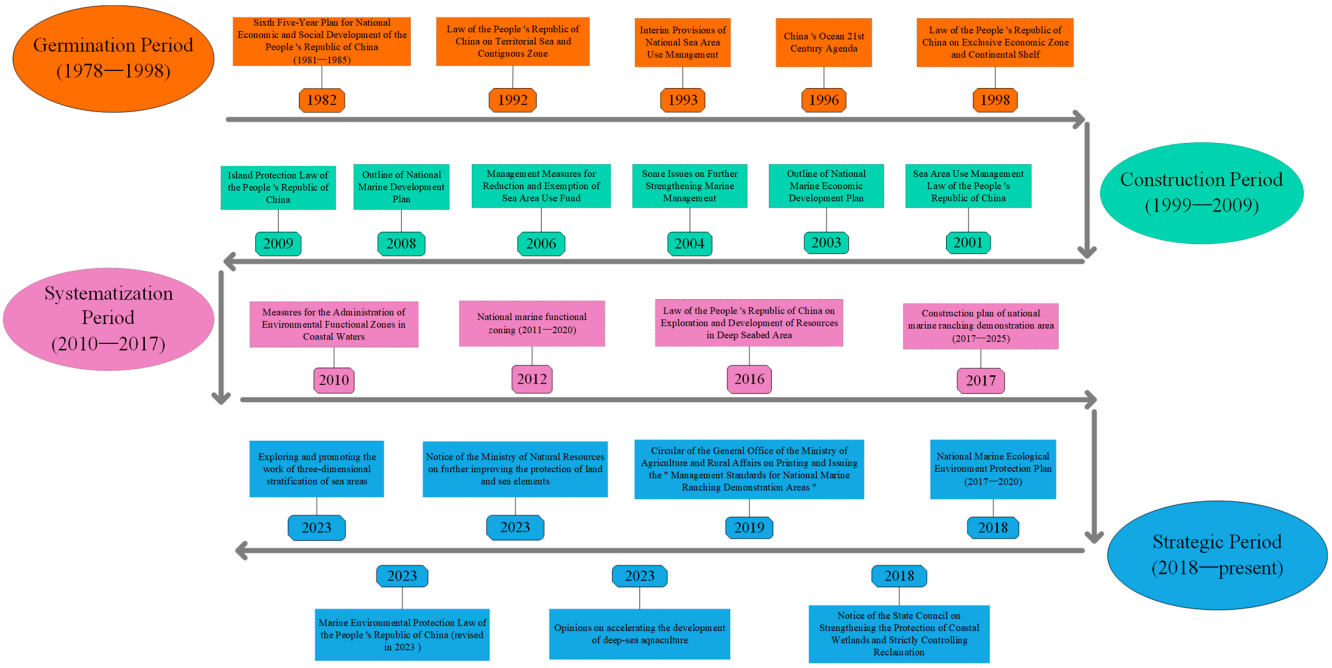


Figure 2. Descriptive statistics.

4.3.1. IOMP Germination Period (1978–1998)

The IOMP germination period can be traced back to the early years of China's reform and opening-up, particularly after 1978. During this period, China began to recognize the significance of its maritime territory and gradually established corresponding management policies and institutions. In the 1980s, China undertook a comprehensive survey of coastal zone and tidal flat resources nationwide, providing crucial data and information for subsequent sea area management policies. In 1982, the Chinese government issued the Sixth Five-Year Plan for the National Economic and Social Development of the People's Republic of China (1981–1985), aimed at conducting investigations and developing marine resources, while also laying the groundwork for marine development and utilization. China has enacted several key laws and regulations to support the implementation of IOMP, including the Law of the People's Republic of China on the Territorial Sea and Contiguous Zone, the Interim Provisions on the Administration of the Use of National Sea Areas, the Measures for the Administration of Marine Nature Reserves, and the Exclusive Economic Zone and Continental Shelf Law of the People's Republic of China. During this period, there were relatively few specific IOMPs, with more focus on the development of legal frameworks. These efforts gradually established a solid legal foundation for IOM, providing the groundwork for the formulation and execution of subsequent policies and regulations.

The ROSTCOM6 software was employed to analyze the titles and content of China's IOPM from 1978 to 1988. The statistical findings of keyword frequency are presented in Table 2. The term "management" was observed 25 times in the policy samples during this period, ranking second only to "ocean". Meanwhile, "development" appeared 17 times in the policy samples. Additionally, professional terms like "continental shelf" and "ships"

were also identified, indicating a specialized focus on marine-related topics. Notably, there were minimal mentions of other management-related terms. These findings suggest that during this period, IOPMs were in their nascent stages, with primary attention directed towards resource development and sea area management.

Table 2. Keyword frequency statistics (1978–1998).

Serial	Keywords	Word Frequency	Serial	Keywords	Word Frequency
1	Ocean	63	6	Ships	8
2	Management	25	7	Use sights	5
3	Development	17	8	Fisheries	4
4	Continental shelf	10	9	Exploration	3
5	Demonstration area	10	10	Breeding	2

The social and semantic network analysis of the keyword matrix for this period is illustrated in Figure 3. Each node in the graph denotes a keyword, with connections between nodes indicating the simultaneous appearances of the two keywords in policy texts and their associated relationship. The significance of keywords is inferred from the number of connections they extend or gather; thicker connecting lines signify stronger direct correlations between keywords [42]. In Figure 3, connections between "resources" "management", "resources" "development" appear thicker than others, suggesting closer associations. Moreover, the keywords "management" and "development" exhibit more extensive node radiation. During this period, the governmental focus on the ocean primarily pertained to the rational development, utilization, and management of marine resources. Overall, China's IOM mechanism had not yet been fully established between 1978 and 1998, with policy interests being relatively dispersed.

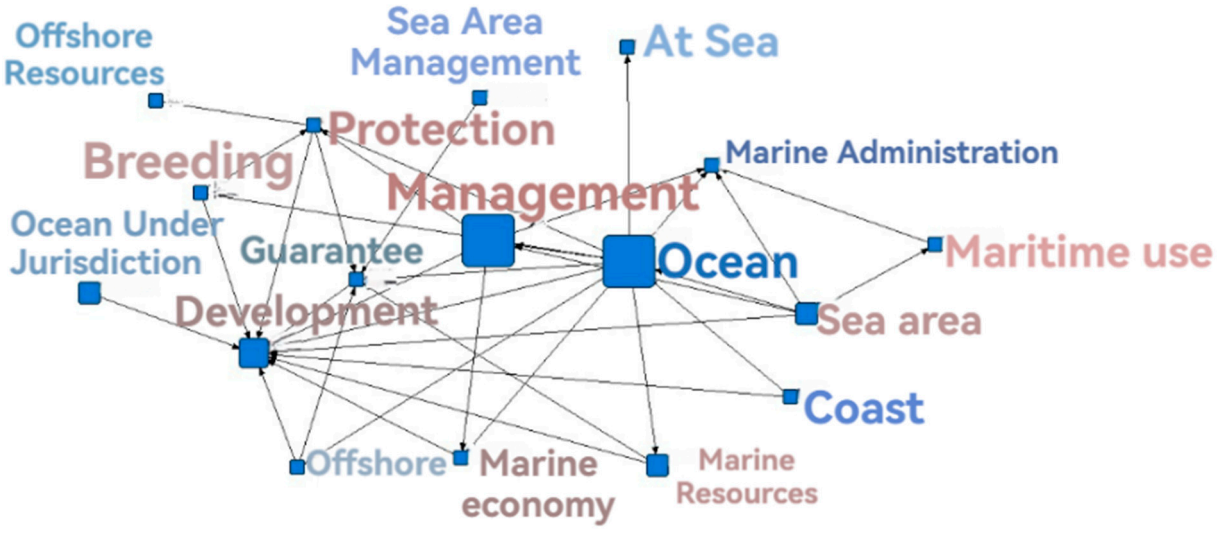


Figure 3. Social network and semantic network analysis (1978–1998).

4.3.2. IOMP Construction Period (1999–2009)

Since the reform of the SOA in 1998, China's IOMP entered a critical phase of rapid development. During this period, significant efforts were made in formulating functional zoning, development planning, supervising and managing the use of sea areas (including coastal zones), and delineating sea areas with neighboring countries. These endeavors yielded fruitful results. The "Marine Environmental Protection Law", revised in 1999, and the "Sea Area Use Management Law", promulgated in 2001, formally established the legal

framework for marine functional zoning. In 2002, the "National Marine Functional Zoning" was completed and implemented by the SCPRC. Subsequently, coastal areas systematically undertook the preparation and approval of marine functional zoning at the provincial, municipal, and county levels. This led to further advancements in sea area ownership management and the continual enhancement of the marine functional zoning system. Various normative documents, such as measures for reducing and exempting sea area use fees and notices on strengthening the collection and management of these fees, were successively issued to standardize the collection and management of sea area use fees. Additionally, a unified national standard for the collection of sea area use fees was established, comprehensively standardizing their collection, management, and reduction. This marked a significant breakthrough in the establishment of a system for the paid use of sea areas. Furthermore, the government promulgated several key legal provisions, including the outline of the national marine economic development plan, regulations on the management of the right to use sea areas, and the outline of the national plan for revitalizing the sea through science and technology, along with the island protection law of the People's Republic of China. Through these legal measures, the development and utilization of marine resources were regulated, the protection of the marine environment was strengthened, and the sustainable development of the marine economy was promoted. Consequently, a more comprehensive IOM system was gradually being established. During this period, there was an increase in the number of IOMPs, and policy construction became more standardized and diversified. These policies gradually aligned with international standards for marine management, demonstrating China's commitment to global marine governance.

The titles and contents of China's IOMP texts from 1999 to 2009 were analyzed, and the statistical results of keyword frequency are presented in Table 3. "Sea area use fee" appeared 42 times in the policy samples during this period, representing the highest word frequency. Following closely behind, the terms "marine utilization" and "sea area usage rights" were the next most frequently occurring keywords in the policy sample. Additionally, terms such as "sea area use management" "reclamation", and "marine functional zoning" began to emerge during this stage, indicating a further maturation of IOMPs from the embryonic period. This also signifies a strategic planning and construction phase for key marine resources. The social network and semantic network analysis of the keyword matrix during this period are depicted in Figure 4. The connections between "sea area use" and "marine utilization", "protection", and "management" are notably thicker than other connections, indicating a relatively closer association between them. Furthermore, the keywords "sea use" "sea area management", and "sea area use fee" represent relatively more lines of node radiation, suggesting their significant importance during this stage. During this period, the government's focus on ocean-related matters was centered around the right to use sea areas and the associated usage fees. Overall, China's IOM mechanism underwent initial establishment and gradual maturation from 1999 to 2009, with policy hotspots beginning to emerge and gain focus.

Table 3. Keyword frequency statistics (1999–2009).

Serial	Keywords	Word Frequency	Serial	Keywords	Word Frequency
1	Sea area use fee	42	6	Sea area use management	13
2	Marine utilization	41	7	Reclamation	13
3	Sea area usage rights	26	8	Marine aquaculture	8

Table 3. *Cont.*

Serial	Keywords	Word Frequency	Serial	Keywords	Word Frequency
4	Marine administration	21	9	Marine functional zoning	7
5	Sea area demarcation	14	10	Marine economic development	6

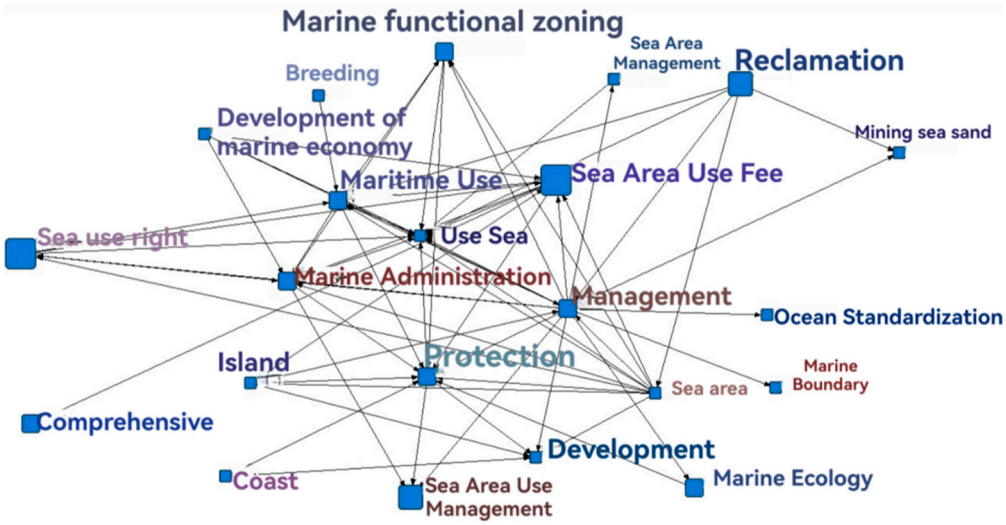


Figure 4. Social network and semantic network analysis (1999–2009).

4.3.3. IOMP Systematization Period (2010–2017)

From 2010 to 2017, China implemented a series of IOMPs aimed at fostering the sustainable development of the marine economy, enhancing the protection and rational utilization of marine resources, and elevating the level of marine ecological environment protection. In 2010, the SOA issued key directives on sea area management, with a focus on revising marine functional zoning and enhancing reclamation management. This initiative comprehensively propelled the advancement of sea area management, marking a transition of China's IOMP into a systematic period. Subsequently, in 2012, national marine functional zoning strategically partitioned the marine space, providing a foundational framework for the balanced development and safeguarding of marine resources. In 2015, the SCPRC issued the national marine main functional area plan, advocating for the strategic planning of marine development and the establishment of a pattern of land–sea coordination and human–sea harmony in marine space utilization. Additionally, the construction plan for the national marine ranching demonstration area, unveiled in 2017, prioritized the restoration of ecological environments in marine ranching waters, aiming to maximize comprehensive benefits encompassing ecological, economic, and social aspects. Moreover, in 2018, the National Marine Ecological Environment Protection Plan (2017–2020) was introduced, providing a systematic framework delineating the timetable and roadmap for marine ecological environment protection. This plan underscored the critical significance of marine ecological preservation. Throughout this period, the overarching focus of China's IOMP was on achieving sustainable utilization of marine resources, safeguarding marine ecological environments, and fostering the robust development of the marine economy, with a concerted effort toward systematic enhancement.

Analyzed the title and content of China's IOMP text from 2010 to 2017 and reported the statistical results of keyword frequency in Table 4. During this period, the term "protection" appeared 28 times in the policy samples, with "marine management", "reclamation", and "coastal conservation" being commonly referenced. During this period, China's

comprehensive maritime management system prominently emphasizes protecting marine resources and the marine ecological environment. Analysis of the keyword matrix in this time, as shown in Figure 5, demonstrates strong correlations between "ocean" and "protection", as well as "resources" and "integration", suggesting a tight association among them. China's IOMP showed increased maturity from 2010 to 2017, marked by a more methodical and uniform method.

Table 4. Keyword frequency statistics (2010–2017).

Serial	Keywords	Word Frequency	Serial	Keywords	Word Frequency
1	Marine utilization	28	6	Tidal flat	6
2	Protection	28	7	Coastal conservation	5
3	Marine management	11	8	Marine ranches	4
4	Reclamation	11	9	Intensive marine utilization	2
5	Sea area usage rights	10	10	Sustainable development	2

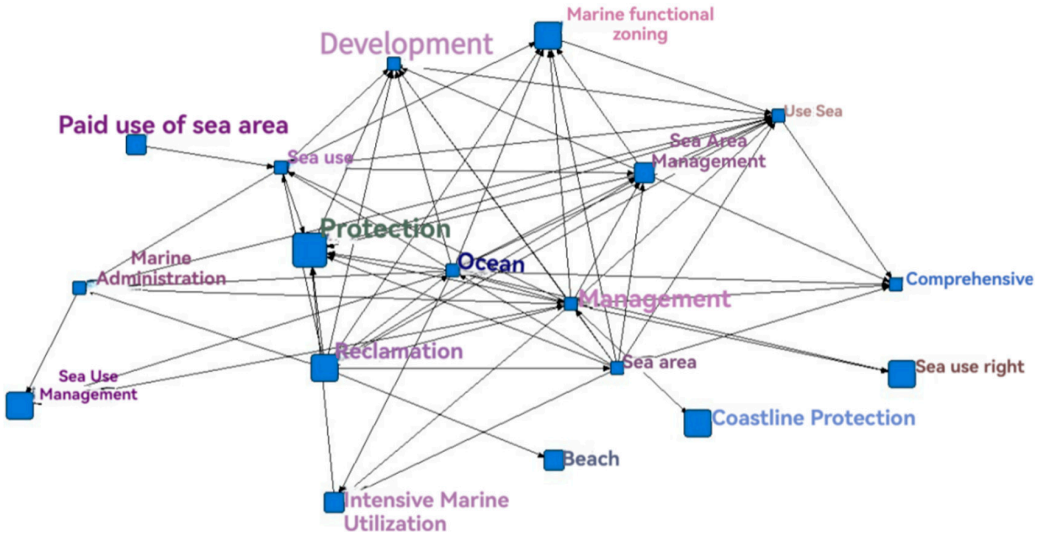


Figure 5. Social network and semantic network analysis (2010–2017).

4.3.4. IOMP Strategization Period (2018–Present)

Since the 18th National Congress of the Communist Party of China, China has elevated the strategy of maritime power to the national strategic level. The 2018 National Marine Ecological Environment Protection Plan articulates the principles of "conforming to nature and ecological management of the sea", and delineates six key aspects: governance, utilization, protection, monitoring, regulation, and prevention. The revision of the Marine Environmental Protection Law of the People's Republic of China in 2023 emphasizes the fundamental principles of "land and sea coordination and comprehensive management", with a focus on bolstering efforts to prevent and control marine pollution, mitigate ecological damage, and enhance comprehensive management practices. Furthermore, the enactment of relevant laws and regulations during this period, including measures to fortify the protection of coastal wetlands, impose strict controls on reclamation activities, manage island and sea area protection funds, and explore the implementation of three-dimensional and hierarchical sea area management, underscores the comprehensive advancement of China's IOMP during the strategization period.

The titles and contents of China's IOMP texts from 2018 to 2024 were thoroughly examined. The statistical analysis of keyword frequency, as depicted in Table 5, reveals significant patterns. "Protection" remains the most frequently mentioned term, appearing 36 times in the policy samples during this period. This underscores the continued emphasis on marine ecological preservation within China's IOM framework. Additionally, keywords such as "three-dimensional layered rights allocation", "land and sea coordination", and "integrated management" have emerged, signaling a shift towards a more holistic approach. This transition is characterized by a move from a "plane" to a "stereoscopic" perspective and from "two-dimensional" to "three-dimensional" considerations. Notably, as shown in Figure 6, the correlation between management, protection, development and other nodes is further strengthened, indicating that the policy content has evolved from mere coordination between land and sea to a strategic reorientation of this coordination.

Table 5. Keyword frequency statistics (2018–present).

Serial	Keywords	Word Frequency	Serial	Keywords	Word Frequency
1	Protection	36	6	Intensive	7
2	Sea area usage rights	23	7	Land and sea coordination	4
3	Reclamation	18	8	Offshore mariculture	3
4	Three-dimensional layered rights allocation	12	9	Integrated management	2
5	Marine ecology	7	10	Mariculture	1

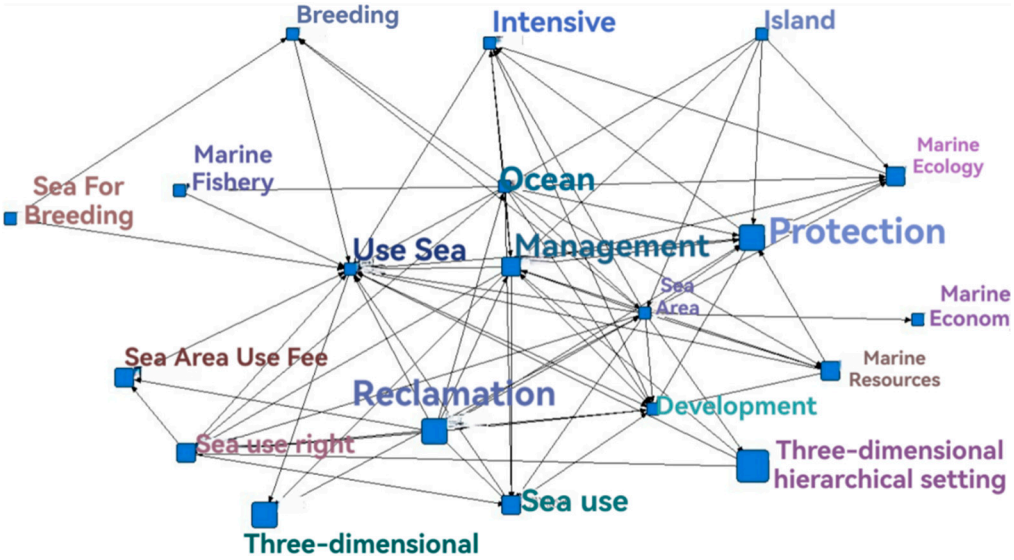


Figure 6. Social network and semantic network analysis (2018–present).

4.4. IOMP Evolution Characteristics

After the reform and opening-up period, the Chinese government recognized the significance of its maritime territory, thus initiating the formulation and execution of China's IOMP. This policy underwent a rigorous exploration phase in its embryonic stage, experienced rapid development during the construction period, underwent comprehensive adjustment in the systematic period, and witnessed transformation and enhancement during the strategization period. A review of this evolution reveals several notable characteristics of China's IOMP.

4.4.1. The Purpose of IOMP Evolution Is Achieving the Harmonious Coexistence of Humans and the Sea

Since the reform and opening-up period, there has been a gradual increase in the number of China's IOMPs, as depicted in Figure 7. This expansion signifies the evolution and refinement of marine policy from early regulations by various sea-related departments and single fields to a more comprehensive approach. It reflects the adaptability of policy to changes in national development strategy and the international landscape, as well as the progressive enhancement of China's marine management system. During the IOMP germination period, China recognized the significance of its maritime territory, leading to the establishment of a dedicated marine management agency, the SOA. This agency was tasked with overseeing sea area usage approvals, with the policy focus primarily directed towards the development of marine resources and sea area management. Subsequent reforms within the SOA propelled China's IOMP into the construction period. Throughout this period, efforts were concentrated on initiatives such as marine functional zoning, sea area fund management, and delineation, all of which were comprehensively and concurrently advanced. In the systematic period, China shifted its focus towards the preservation of marine resources and ecosystems, adopting a scientific approach to marine development aimed at maximizing overall benefits. Subsequently, in the strategization period, China embarked on a comprehensive drive to implement governance measures, including the establishment of sea areas in three dimensions and hierarchical fashion, fostering coordination between land and sea, promoting harmony between humans and the sea, and fostering sustainable development of the marine economy. Through an analysis of the aforementioned stages of policy evolution, China's maritime policy transitioned from its germination phase to the strategic phase, emphasizing resource development while also addressing the comprehensive development of all societal aspects. However, the ultimate goal remains singular: achieving harmonious coexistence between humanity and the sea.

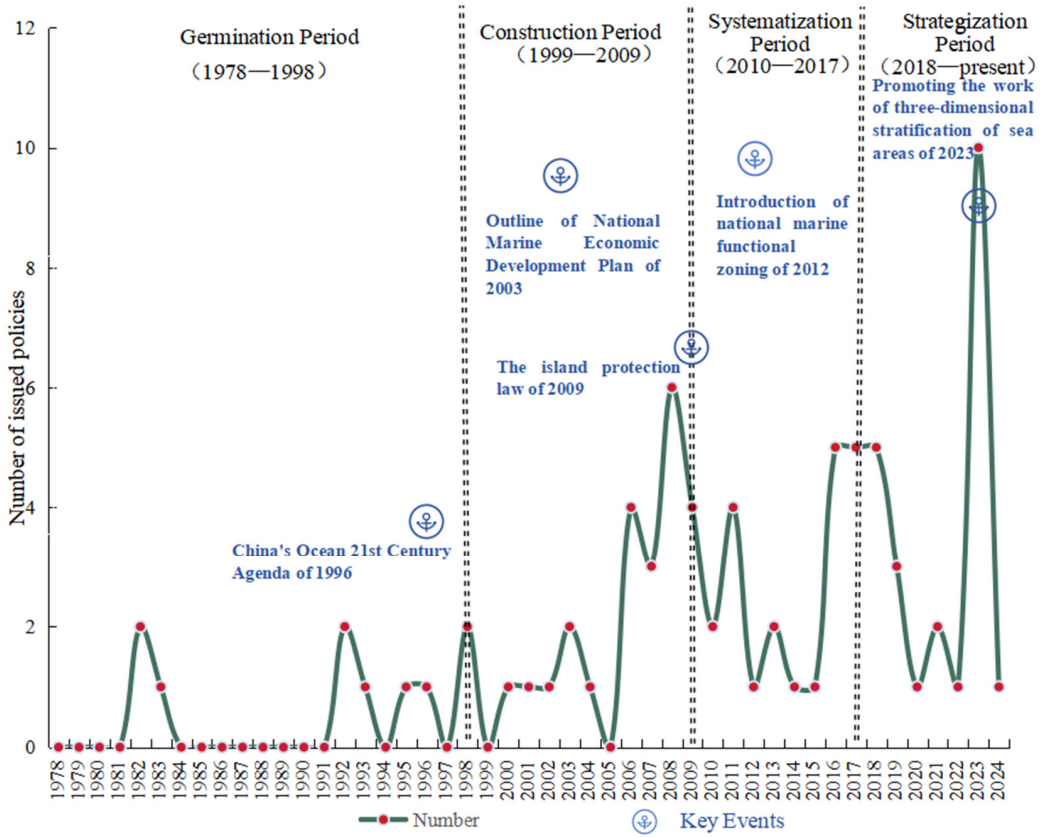


Figure 7. Number of IOMPs (1978–present).

4.4.2. The External Conditions of IOMP Evolution Are Influenced and Constrained by Many Factors

In the 1970s, China experienced social and economic turbulence, ecological degradation, and soil erosion. However, by the 1980s, as the social environment stabilized, significant changes were observed in the macroeconomic landscape shaping China's marine industry development. The maritime security situation began to stabilize, accompanied by an increasing emphasis placed by the Chinese government on marine affairs [43]. In the germination period, the rapid development of marine resources not only yielded significant dividends but also brought forth numerous challenges, including ecological damage and environmental pollution [44]. This backdrop marked the initiation of further exploration of China's IOMP. With peace and development prevailing in the international arena and domestic maritime activities on the rise, China responded to the challenges confronting marine management by enhancing its IOMP. This included a focus on supervising and managing sea area usage, including coastal zones, marking the transition of policy evolution into the construction period. During the systematic period, amidst worsening marine ecological issues and a growing awareness of resource conservation and environmental protection, the government turned its attention to policy implementation aimed at the coordinated development of marine resource exploitation and marine ecological preservation. Against the backdrop of deepening reforms in the marine management system and the strategic aspiration to become a maritime power, policies during the strategization period emphasized mitigating marine ecological damage and enhancing the level of comprehensive management. Consequently, the comprehensive management of the ocean evolved from a two-dimensional approach to a three-dimensional one. It is evident that external conditions, both constraining and promoting, play a pivotal role in shaping the evolution of IOMP.

4.4.3. The External Performance of IOMP Evolution Is Reflected in the Dynamic Process of Continuous Correction and Adjustment

In response to fluctuations in the domestic and international marine landscape, as well as the evolving needs of economic and social development, scientific advancement, and marine resource and environmental conservation, China continually evaluates and adjusts existing policies to meet new development imperatives. The enactment of international legal frameworks like the UNCLOS prompted adjustments in China's maritime policy. These include the introduction of China's Oceans 21st Century Agenda and the advancement of its IOMP. During the stage of constructing IOMP, the surge in marine activities posed challenges to the utilization of sea area resources. China promptly adapted its policy content to address these challenges and further bolstered the management of sea area ownership. This is exemplified by the enactment of the Law of the People's Republic of China on the Use and Management of Sea Areas. In the systematic period, marine policy incorporated considerations of climate change's impact on the marine environment, including sea level rise and ocean acidification. Measures were taken to bolster the protection and restoration of the marine environment; these included revising the implementation measures of the regulations of the People's Republic of China on the environmental protection management of marine oil exploration and development and management measures for the acceptance of the use of sea areas for the completion of reclamation projects. During the strategization period, the SCPRC's endorsement of the "14th Five-Year" marine economic development plan underscored the implementation of the new development concept, prompting dynamic adjustments in marine policy in alignment with national development strategy. Since the inception of reform and opening-up, China's IOMP has undergone continuous exploration, reform, and enhancement. Responding to practical needs and pertinent policies of marine management, an integrated management system encompassing marine rights and interests, sea area use, marine resources, marine environment, marine economy, and marine science and technology was established, as illustrated in Figure 8.

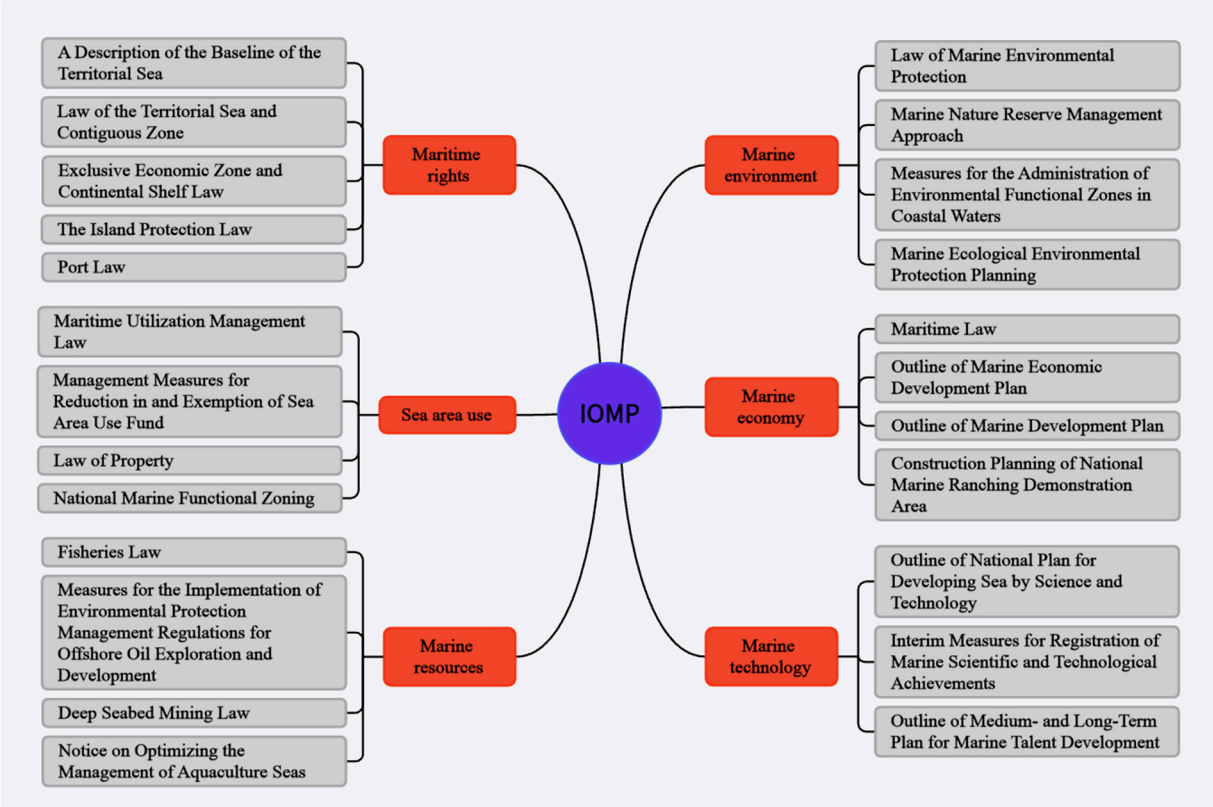


Figure 8. China's IOMP system (only some representative policies are listed).

5. Challenges of the IOMP

5.1. The Sea-Related Legal System Needs to Be Updated and Improved

A perfect maritime policy is very important for a country to become a maritime power [45]. Currently, China's IOM is undergoing significant transformations. The implementation of the "Deepening the Reform Plan of the Party and State Institutions" policy in 2018 brought about systematic changes in the national and coastal local marine management institutions. Concurrently, the fundamental system of IOM experienced substantial modifications through reforms in the "multi-regulation" land and space planning system, the real estate registration system, and the tax and fee system. Certain provisions within the existing legal framework pertaining to maritime affairs proved inadequate to address the evolving demands of marine management. Moreover, several sea-related policies continue to exhibit deficiencies, including incomplete content, unreasonable structures, and inadequate coordination [46], which impede the high-quality economic development of coastal areas. To address the emerging challenges and meet the evolving demands, it is imperative to revise maritime laws based on accumulated practical experiences and rectify the inadequacies within existing content and systems [47].

5.2. The Multitude of Sea-Related Policies Lack Sufficient Cohesion and Coordination

Currently, there exist a multitude of sea-related policies, resulting in insufficient alignment and lax implementation. These policies encompass spatial regulations such as marine main functional area planning, marine functional zoning, the marine ecological red line system, overall planning for coastal zone comprehensive protection and utilization, coastal strategic planning, land use planning in coastal zone areas, urban planning, coastal development zone planning, as well as policies for industries like port and shipping, fisheries, salt production, tourism, and others. From the perspective of the issuing authority, these policies emanate from both national and provincial levels. The variety of policies often leads to conflicts and inefficiencies in policy enforcement. Furthermore, many of these

sea-related policies lack long-term considerations, primarily aiming to address current socio-economic needs and local coastal development while neglecting the sustainability of marine resources and the principle of intergenerational equity [48].

5.3. Domestic Maritime Legal Policies Related to the Convention Require Adjustment

Since the conclusion of the Convention, China has always been actively involved in the negotiation of the UNCLOS [49] and has attained recognition as a maritime power within the international community. It boasts several representative institutions and organizations that actively contribute to shaping international regulations (Table 6). Moreover, China has enacted numerous policies aligned with international conventions. For instance, the 1992 Law of the People's Republic of China on the Territorial Sea and the Contiguous Zone elucidates provisions regarding the entry of foreign military vessels into China's territorial waters, signaling China's stance on freedom of navigation and its proactive engagement with international conventions. However, China continues to face challenges, including a limited influence on and a muted presence in shaping international regulations [50,51], posing significant hurdles for IOM [52]. Given the evolving international maritime legal landscape and ongoing advancements in domestic maritime activities, China must regularly review and refine its domestic maritime legal framework concerning the UNCLOS. This process should prioritize safeguarding national maritime rights and interests while ensuring compliance with international legal standards and effectively protecting maritime rights.

Table 6. Major international maritime conventions have been signed in China.

Name of the Convention	Signing Place and Time	Effective Time	China's Participation
UNCLOS	Montego Bay, 10 December 1982	16 November 1994	On 10 December 1982, the Convention was signed; on 7 June 1996, the instrument of ratification was deposited; entered into force for China on 7 July 1996
Protocol of 1996 to the 1972 London Convention	London, Washington, Moscow, Mexico City, 29 December 1972	30 August 1975	Instrument of accession deposited on 14 November 1975
Treaty on Antarctica	Washington, D.C., 1 December 1959	23 June 1961	On 8 June 1983, the instrument of accession was deposited; effective for China on the same day
Protocol of the Antarctic Treaty on Environmental Protection	Madrid, 23 June 1991	14 January 1998	On 4 October 1991, the protocol was signed; on 2 August 1994, the instrument of approval was deposited; entered into force for China on 14 January 1998
Protocol of Intervention on Non-Oil Pollution of the High Seas, 1973	London, 2 November 1973	30 March 1983	On 23 February 1990, the instrument of accession was deposited; entered into force for China on 24 May 1990
Protocol of 1978 to the International Convention for the Prevention of Pollution from Ships, 1973	London, 17 February 1973	2 October 1983	Instrument of accession deposited on 1 July 1983; entered into force for China on 2 October 1983
Amendment to Annex I of Protocol 1978 to the International Convention for the Prevention of Pollution from Ships, 1973	London, 2 November 1973 and 17 February 1978	7 September 1984	Accepted by default on 7 January 1986; entered into force for China on 7 January 1986

Table 6. *Cont.*

Name of the Convention	Signing Place and Time	Effective Time	China's Participation
1990 International Convention on Oil Pollution Preparedness, Response and Cooperation	London, 30 November 1990	13 May 1995	On 30 March 1998, the instrument of accession was deposited; entered into force for China on 30 June 1998
Convention for North Pacific Marine Science Organization	Ottawa, 12 December 1989	24 March 1992	On 22 October 1991, the Convention was signed; entered into force for China on 24 March 1992
Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)	Canberra, 20 May 1980	7 April 1982	Entered into force for China on 2 October 2007
International Convention on Control of Harmful Anti-Fouling Systems on Ships	London, October 2001	17 September 2008	On 3 March 2011, the instrument of accession was deposited; entered into force for China on 7 June 2011
2007 Nairobi International Convention for the Removal of Wrecks from Ships	Nairobi, May 2007	14 April 2015	On 11 November 2016, the instrument of accession was deposited; entered into force for China on 11 February 2017
International Convention for the Control and Management of Ship Ballast Water and Sediments	London, 13 February 2004	8 September 2017	On 22 October 2018, the instrument of accession was deposited; entered into force for China on 22 January 2019
BBNJ	New York, 20 September 2023	Not yet in force	On 20 September 2023, the Convention was signed

6. Prospects of the IOMP

6.1. Speeding up the Revision and Improvement of Maritime-Related Laws and Regulations

Scientific and comprehensive maritime laws and regulations serve as the cornerstone for the effective implementation of IOM. To this end, efforts must be made to enhance the legal framework and address any deficiencies in sea-related legislation. It is advisable to expedite legislative processes and promptly enact long-awaited maritime laws, such as the "Basic Law on the Oceans", which have been included in legislative plans but faced delays. Additionally, outdated laws and regulations that no longer align with economic and social development should be promptly revised, such as amending the "Law on the Administration of Sea Area Use" [53]. Through the revision and enhancement of laws and regulations pertaining to maritime affairs, it becomes feasible to formulate sea-related policies that not only align with national interests but also cater to local needs [54]. Additionally, it is imperative to advance the achievement of China's marine environmental protection objectives within the strategic framework of bolstering the rule of law both domestically and internationally [55]. Integral to China's foreign-related legal framework, maritime law encompasses both legislation concerning international maritime affairs and the domestic application of international treaties. Strengthening the promulgation of foreign-related maritime laws and regulations can furnish a robust legal framework for advancing maritime prowess and affording a legal foundation for proactive engagement in the global arena.

6.2. Integrating Sea-Related Policies to Play the Role of Land and Sea Coordination

The government places significant emphasis on the coordinated development of land and sea, which entails the unified planning of both land and sea development and serves as a pivotal concept guiding integrated land–sea development [56,57]. Leveraging the compilation of land and sea planning as a strategic opportunity, the state integrates all sea-related planning initiatives, grounded in marine ecosystem considerations, with a focus on both protection and development. Tailored control objectives are delineated across various scales, and development timelines are clarified accordingly. Through meticulous

planning and strategic guidance, the objective is to achieve the efficient and intensive utilization of the "production–living–ecological" space (comprising ecological, production, and residential areas). The current sea-related policies and land-related policies are fragmented, highlighting the need for comprehensive consolidation of sea-related policies. It is essential to enhance the coordination, transparency, and execution of marine policies through integration, ensuring seamless alignment between marine and land policies. Unified planning is crucial to guiding the scientific development and protection of marine resources, fostering a cohesive development model of land–sea integration [58].

6.3. Strengthening International Judicial Collaboration

To address the challenges in maritime rule-of-law construction, China should actively enhance international judicial cooperation. Firstly, timely adjustments to maritime policies are crucial. The UNCLOS serves as a comprehensive global treaty with near-universal applicability [59]. Its dispute settlement mechanism offers an institutionalized platform for strengthening international maritime environmental law judicially [60]. Building upon the UNCLOS, there is a need to enhance marine legislation to address existing issues concerning the protection of marine rights and interests [50]. Furthermore, it is imperative to bolster both international and regional cooperation. China should persist in advancing the development of the "South China Sea Code of Conduct" in collaboration with Association of Southeast Asian Nations (ASEAN), fostering a regional maritime governance framework within the South China Sea to effectively uphold regional security and stability [61]. Moreover, enhancing exchanges and collaboration between Chinese judicial institutions and courts worldwide is essential. Actively exploring practices for judicial protection of the marine environment can significantly contribute to this endeavor [62]. Establishing an international maritime justice center would further augment maritime soft power [63]. The Chinese delegation attended the United Nations Conference on the Decade of Ocean Science for Sustainable Development in 2024, sharing its practices and experiences in marine scientific research, environmental protection, and disaster reduction. The delegation called on all countries to invest more efforts and resources to contribute to the effective implementation of the Decade of Ocean Science and the 2030 Agenda for Sustainable Development. China must continue to strengthen international judicial cooperation to promote the establishment of a fair and equitable maritime trade order. By sharing its experience and insights, China can contribute to the development of a maritime community with a shared future.

7. Conclusions and Discussion

7.1. Main Conclusions

This paper utilizes literature analysis and content analysis to investigate China's IOMP from 1978 to the present, focusing on its evolution characteristics, challenges, and prospects. Drawing from the international landscape of marine management and the policy's specific content, this paper categorizes the evolution of China's IOMP into four stages: a germination period (1978–1998), a construction period (1999–2009), a systematization period (2010–2017), and a strategization period (2018–present). In terms of the purpose of this evolution, it is mainly geared towards achieving the harmonious coexistence of humans and the sea; in terms of its external conditions, it is influenced and constrained by many factors; and in terms of its external performance, it is reflected in a dynamic process of continuous correction and adjustment. Although the Chinese government has made remarkable achievements in its IOMP, it still faces some challenges, mainly reflected in the following aspects: the sea-related legal system needs to be updated and improved; the multitude of sea-related policies lacks sufficient cohesion and coordination; and domestic maritime legal policies related to the UNCLOS require adjustment. Responding effectively to these challenges holds paramount importance for the prudent utilization of marine resources, the preservation of the marine environment, and the safeguarding of marine rights and interests. It is recommended to improve the IOMP by focusing on three aspects:

speeding up the revision and improvement of maritime-related laws and regulations; integrating sea-related policies to play the role of land and sea coordination; and strengthening international judicial collaboration.

7.2. Limitations and Discussions

This paper showed that the evolution of China's IOMP is continuously progressing. By consistently exploring, improving, and reforming, it may effectively tackle new difficulties and practical needs arising from increasing scientific discoveries and environmental changes. This paper endeavored to delve deeply into China's IOMP through content analysis methods for the first time. Sample selection underwent preliminary screening by human judgment, which introduced a degree of subjectivity. Additionally, China boasts numerous coastal prefecture-level cities, many of which have issued a plethora of sea-related policies not extensively discussed in this paper. This paper solely focuses on examining the quantity and specific content of China's IOMP. However, policy issues frequently encounter political, economic, social, and technical hurdles during the implementation process, warranting further investigation into their implementation efficiency in the future. As China is a prominent maritime power globally, the execution of China's IOMP holds immense significance not only for China itself but also for influencing global ocean governance, environmental preservation, peace, stability, and sustainable development positively. The successful execution of its IOMP can furnish other nations with valuable experiences and models to emulate, foster international policy discourse, bolster mutual comprehension and trust, and collaboratively devise more efficacious global ocean policies. For instance, Xiamen, China, as the sole city case, has been included in the global Integrated Marine Management Blue Book. The specific practices of "legislation first, centralized coordination, scientific and technological support, comprehensive law enforcement, and public participation" in the comprehensive management of Xiamen's coastal zones have been summarized as the "Xiamen Model". This model has been disseminated both domestically and internationally and has contributed to training a significant number of marine management professionals for Southeast Asia. However, this paper does not provide a more in-depth study of international IOMP. Many maritime countries around the world have developed relatively mature policy systems. Notable examples include the US's ecosystem-based integrated marine management, Japan's science and technology-driven marine environmental governance, the EU's regional cross-border sea cooperation and governance, and ASEAN's cooperative marine environmental management. In the future, we will focus on the ocean management policies and practices of these countries and other international maritime organizations to promote mutual learning and exchange.

Author Contributions: Conceptualization, H.K. and Y.X.; methodology, Y.Z. (Yi Zhang); software, Y.Z. (Yuqi Zhang) and Y.Z. (Yuqi Zhang); validation, S.W. and G.Z.; formal analysis, H.K. and Y.X.; visualization, Y.X.; resources, H.K.; data curation, Y.Z. (Yuqi Zhang), Y.X. and G.Z.; writing—review and editing, S.W. and Y.X. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the National Natural Science Foundation of China (Grant No. 72303124), the Natural Science Foundation of Shandong Province (Grant No. ZR2023QG037), the Fujian Provincial Foundation for Public Welfare Scientific Research Institution, China (Grant No. 2023R1007004), the Qingdao Social Science Planning and Research Project (No. QDSKL2301136), and the Fujian Provincial Key Laboratory of Coast and Island Management Technology Study (Grant No. FJCIMTS 2023-05).

Data Availability Statement: All data generated or analyzed during this study are included in this article.

Acknowledgments: The authors thank the editor and the anonymous reviewers for providing constructive suggestions and comments on this manuscript.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

ASEAN	Association of Southeast Asian Nations
BBNJ	Marine Biodiversity of Areas Beyond National Jurisdiction
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
EU	European Union
IOM	Integrated Ocean Management
IOMP	Integrated Ocean Management Policy
MNR	Ministry of Natural Resources
UNCLOS	United Nations Convention on the Law of the Sea
US	United States
SCPRC	State Council of the People's Republic of China
SDGs	United Nations Sustainable Development Goals
SOA	State Oceanic Administration

References

1. United Nations. *United Nations Convention on the Law of the Sea*; Brill: Montego Bay, Jamaica, 1982. Available online: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf (accessed on 2 March 2024).
2. Xu, C. *The Discussion about the Legal System of Use and Administration of Sea Area*; Dalian Maritime Publishing House: Dalian, China, 2006. Available online: https://www.doc88.com/p-972197204107.html (accessed on 5 March 2024).
3. Claus, S.; De Hauwere, N.; Vanhoorne, B.; Deckers, P.; Souza Dias, F.; Hernandez, F.; Mees, J. Marine regions: Towards a global standard for georeferenced marine names and boundaries. *Mar. Geod.* **2014**, *37*, 99–125. [CrossRef]
4. Underdal, A. Integrated Marine Policy: What? Why? How? *Mar. Pol.* **1980**, 159–169. [CrossRef]
5. Winther, J.G.; Dai, M.; Rist, T.; Hoel, A.H.; Li, Y.; Trice, A.; Morrissey, K.; Juinio-Meñez, M.A.; Fernandes, L.; Unger, S.; et al. Integrated ocean management for a sustainable ocean economy. *Nat. Ecol. Evol.* **2020**, *4*, 1451–1458. [CrossRef] [PubMed]
6. Skallerud, K.; Armbrecht, J. A segmentation of residents' attitudes towards mariculture development in Sweden. *Aquaculture* **2020**, *521*, 735040. [CrossRef]
7. Wang, Q.Y. *Sustainable Development of Mariculture: Challenges and Countermeasures*; Ocean Press: Beijing, China, 2007; pp. 1–7; ISBN 9787502769079. Available online: https://book.douban.com/subject/2327367/ (accessed on 10 March 2024).
8. Yin, T. *Research on China 's Maritime Property Rights System*; China Legal Publishing House: Beijing, China, 2004. Available online: http://www.law-lib.com/shopping/shopview_p.asp?id=15126 (accessed on 12 March 2024).
9. He, H.W.; Suo, A.N. *Overview of Integrated Management of China's Maritime Areas*; Ocean Publishing House: Beijing, China, 2022. Available online: https://item.kongfz.com/book/38518025.html (accessed on 15 March 2024).
10. Winther, J.-G.; Dai, M. *Integrated Ocean Management*; World Resources Institute: Washington, DC, USA, 2020. Available online: https://www.oceanpanel.org/blue-papers/integrated-ocean-management (accessed on 17 March 2024).
11. Xing, B. *From This Coast to the World—The International Impact of Xiamen's Experience in Ocean Governance*; Guangming Dail: Beijing, China, 2024. Available online: https://news.gmw.cn/2024-02/21/content_37155629.htm (accessed on 20 March 2024).
12. Wang, Y.; Zhong, Q.; Cui, X.; Bu, H.; Yu, F. *The Butterfly Change of Yundang Lake*; Xiamen Daily: Xiamen, China, 2024. Available online: https://epaper.xmrb.com/xmrb/pc/con/202402/21/content_15655.html (accessed on 20 March 2024).
13. Li, F.; Xi, Z.; Liang, X. Review of China's policy and management system for the paid use of sea area. *Chin. J. Pop. Res. Environ.* **2019**, *17*, 58–66. [CrossRef]
14. Joana, B.; Ambre, S.; Christopher, K.P.; Eva, G.; Gui, M.; Jeroen, S.; David, C.; Telmo, M. Systematic evaluation of a spatially explicit ecosystem model to inform area-based management in the deep-sea. *Ocean Coast. Manag.* **2023**, *224*, 106807. [CrossRef]
15. Zhang, H. On the conflict between the right in fisheries and the right to the use of sea areas and its coordination. *J. Hainan Univ. (Hum. Soc. Sci.)* **2015**, *33*, 48–53. (In Chinese) [CrossRef]
16. Kong, H.; Shen, J.; Zhao, Y.; Sun, Q. Assessment of sea-area benchmark pricing: Using Chinese aquaculture to evaluate and revise the price structure of resources. *J. Coast. Res.* **2022**, *38*, 925–936. [CrossRef]
17. Yue, Q.; Zhao, M.; Yu, J. Sea use fees in China: An effective economic tool for sea use management. *Coast. Manag.* **2018**, *46*, 510–526. [CrossRef]
18. Yang, L.; Wu, L.; Yan, S. Market-based sea use management in China: Features and countermeasures. *Mar. Pol.* **2020**, *120*, 104091. [CrossRef]
19. Liu, S.; Hou, Z.; Xu, W.; Zhao, M. On the sea usage right mortgage and related management policies in China. *Ocean Dev. Manag.* **2016**, *33*, 81–83. (In Chinese)
20. Yu, X.; Lin, S.; Shen, W.; Chen, Q. The tiered transaction system for sea use rights in China: Theoretical basis and market construction. *Mar. Pol.* **2023**, *147*, 105403. [CrossRef]
21. Xue, Y.; Yan, J.; Zheng, H. Integrated ocean management (IOM) for marine sustainable development goal (SDG)14: A case study of China's Bohai Sea. *Sustainability* **2023**, *15*, 5979. [CrossRef]
22. Wang, S.; Lu, B.; Yin, K. Financial development, productivity, and high-quality development of the marine economy. *Mar. Pol.* **2021**, *130*, 104553. [CrossRef]

23. Wang, S.; Li, W.; Xing, L. A Review on marine economics and management: How to exploit the ocean well. *Water* **2022**, *14*, 2626. [CrossRef]
24. Wang, N.; Zhu, G.; Li, X.; Cheng, J.; Yi, W.; Liu, S.; Xie, Z. Transitions and suggestions for China's coastal port reclamation policies. *Ocean Coast. Manag.* **2023**, *236*, 106532. [CrossRef]
25. Sui, X.; Hu, M.; Wang, H.; Zhao, L. Measurement of coastal marine disaster resilience and key factors with a random forest model: The perspective of China's global maritime capital. *Water* **2022**, *14*, 3265. [CrossRef]
26. Yuan, R.; Xu, R.; Zhang, H.; Hua, Y.; Zhang, H.; Zhong, X.; Chen, S. Detecting shoreline changes on the beaches of Hainan island (China) for the period 2013–2023 using multi-source data. *Water* **2024**, *16*, 1034. [CrossRef]
27. Duan, H.; Zhang, H.; Huang, Q.; Zhang, Y.; Hu, M.; Niu, Y.; Zhu, J. Characterization and environmental impact analysis of sea-land reclamation activities in China. *Ocean Coast. Manag.* **2016**, *130*, 128–137. [CrossRef]
28. Wang, X.; Chen, W.; Zhang, L.; Jin, D.; Lu, C. Estimating the ecosystem service losses from proposed land reclamation projects: A case study in Xiamen. *Ecol. Econ.* **2010**, *69*, 2549–2556. [CrossRef]
29. Yu, M.; Huang, Y.; Fu, Q. Sustainable management of marine biodiversity in areas beyond national jurisdiction by establishing protected areas on the high seas: A Chinese perspective. *Sustainability* **2023**, *15*, 1927. [CrossRef]
30. Chang, Y.; Xin, S.; Zhang, X. A proposal for joint marine scientific research activities in the disputed maritime areas of the south China sea. *Coast. Manag.* **2024**, *50*, 215–236. [CrossRef]
31. Bai, J.; Yan, Y.; Cao, Y.; Cui, Y.; Chang, I.-S.; Wu, J. Marine ecological security shelter in China: Concept, policy framework, mechanism and implementation obstacles. *J. Environ. Manag.* **2024**, *351*, 119662. [CrossRef] [PubMed]
32. Jiang, R.; Guo, P. Sustainable management of marine protected areas in the high seas: From regional treaties to a global new agreement on biodiversity in areas beyond national jurisdiction. *Sustainability* **2023**, *15*, 11575. [CrossRef]
33. Li, W.; Yue, Q.; Hu, H.; Liu, L. Current status of ecological compensation for Bohai Sea reclamation and management countermeasures. *Mar. Pol.* **2023**, *155*, 105778. [CrossRef]
34. Lu, H. *Research on the Construction of Marine Ecological Civilization in Our Country*; Dalian Maritime University: Dalian, China, 2017.
35. Li, F.; Ding, D.; Chen, Z.; Chen, H.; Shen, T.; Wu, Q.; Zhang, C. Change of sea reclamation and the sea-use management policy system in China. *Mar. Pol.* **2020**, *115*, 103861. [CrossRef]
36. Lin, Y.; Xue, X.; Hu, W.; Chen, Q.; Zhang, Y.; Huang, F.; Huang, J.; Wang, C. Implementing Regional Sea Use Planning system in China: Evolution, drivers and experiences. *Mar. Pol.* **2022**, *146*, 105298. [CrossRef]
37. Guo, Y.; Song, W.L.; Yang, N. The comparison between the statistical system of sea-related departments and the national statistical investigation system. *Stat. Decis.* **2014**, *10*, 21–23. [CrossRef]
38. Yu, J.K.; Liu, J.T. Exploring governance policy of marine fishery litter in China: Evolution, challenges and prospects. *Mar. Pollut. Bull.* **2023**, *188*, 114606. [CrossRef]
39. Harwood, T.; Garry, T. An overview of content analysis. *Mrk. Rvw.* **2003**, *3*, 479–498. [CrossRef]
40. Ma, J.; Li, H.; Wang, F. Textual analysis of China's scientific and technological achievements transformation policy—Based on the dual perspectives of policy tools and innovation value chain. *Sci. Tech. Manag. R.* **2017**, *37*, 34–42.
41. Jin, W.; Xu, L.; Wu, S.; Xu, Y.; Han, S. Green development policies for China's manufacturing industry: Characteristics, evolution, and challenges. *Sustainability* **2023**, *15*, 10618. [CrossRef]
42. Ge, Z.; Song, W. Research on the new policy of local government to promote the transformation of scientific and technological achievements. *Sci. Tech. Manag. R.* **2015**, *35*, 30–35. [CrossRef]
43. Zhang, H. Ideas and institutional change: An analysis of the changes in the comprehensive marine management system of new China. *Contem. World Soc.* **2015**, *6*, 162–167. [CrossRef]
44. Shi, C.; Ma, W. Reform of China's Marine Management System Since 1978: Review and Prospect. Ministry of Education, State Oceanic Administration, China Marine Development Research Center. Available online: https://aoc.ouc.edu.cn/2019/1022/c9821a272934/page.htm (accessed on 11 April 2024).
45. Wu, W. The construction process of China's maritime legal system and global maritime governance. *APAC Secy. Mar. Aff.* **2021**, *6*, 55–68+3.
46. Cao, X.; Chu, B. The systematic improvement path of China's sea-related laws. *Pac. J.* **2016**, *24*, 9–16.
47. He, G. *Speed up the Revision of the Law, Improve the Level of Sea Area Management*; China Marine Development Research Center: Qingdao, China, 2024. Available online: https://aoc.ouc.edu.cn/2024/0307/c9824a456087/page.htm (accessed on 13 April 2024).
48. Wang, H.J.; Ding, N.; Yue, Q.; Cui, D.D. *Analysis on the Integrated Management of Sea Areas under the Background of Land and Sea Coordination*; China Marine Development Research Center: Qingdao, China, 2021. Available online: https://aoc.ouc.edu.cn/2021/0822/c9821a344369/page.htm (accessed on 14 April 2024).
49. Gao, S.X. United Nations Convention on the Law of the Sea at 40: Relevant practice of the regime of islands. *Law Rvw.* **2024**, *42*, 172–185. [CrossRef]
50. Yang, Z. China and the United Nations Convention on the Law of the Sea 40 years: History, influence and future Prospects. *Contem. Law Rvw.* **2022**, *36*, 29–40.
51. Pan, X. Research on the implementation of the arbitral proceedings under annex VI of UNCLOS. *Chin. J. Mar. Law.* **2023**, *34*, 3–15.
52. Zhang, H. The 40th anniversary of the opening for signature of the United Nations Convention on the Law of the Sea: Retrospect and prospect. *Wuhan Univ. Int. Law Rvw.* **2022**, *6*, 1–14.

53. Sun, Y. Interpretation on the major changes and contents of the revised Marine Environmental Protection Law of 2023. *Envion. Prot*. **2023**, *51*, 14–18.
54. Shi, Q. *The Deputy Director of the Bureau of Ocean Affairs Interprets the "Management Measures for the Protection and Utilization of Coastline"*; Central People's government of the People' s Republic of China: Beijing, China, 2017. Available online: https://app.www.gov.cn/govdata/gov/201704/07/402497/article.html (accessed on 16 April 2024).
55. Qin, T. Regulations on Chinese marine nature conservation in the context of advancing the rule of law in domestic and foreign-related affairs. *J. Pol. Sci. Law* **2023**, *5*, 43–60.
56. Li, X.; Fu, W.; Miu, D.; Su, G. Shenzhen coastal zone planning under land-sea integration guidance. *Planners* **2019**, *35*, 18–24.
57. Yuan, H.; Tang, H.; Xu, Z.; Zhang, D. Path and practice of territorial space ecological restoration in coastal areas from the perspective of land-Sea integration. *Planners* **2024**, *40*, 89–97.
58. Xu, Y.; Mou, X.; Liu, X.; Wang, Y. The key contents and approaches of land-sea coordination in the new era of land space planning. *Ocean Devt. Manag.* **2021**, *38*, 75–79.
59. Martin-Nagle, R. Offshore freshwater aquifers: Toward equitable distribution. *WIREs Water* **2020**, *7*, 8709. [CrossRef]
60. Zhang, H. The judicial strengthening of international marine environmental law and its enlightenment to China. *Contem. Law Rvw.* **2022**, *36*, 145–160.
61. Ge, M. The Code of Conduct in the South China Sea (COC) and innovation in Regional Ocean Governance Mechanisms. *Southeast Asian St.* **2024**, 70–87+156–157. [CrossRef]
62. Qiao, W. Contribute Judicial Wisdom and Strength to Global Marine Environmental Protection. China Court Network. 2021. Available online: https://www.chinacourt.org/article/detail/2021/10/id/6334133.shtml (accessed on 23 April 2024).
63. Wang, S. Build an International Maritime Justice Center to Boost the Construction of a Maritime Power. State Oceanic Administration, China Marine Development Research Center. 2018. Available online: https://aoc.ouc.edu.cn/2018/0803/c9821a207515/page.psp (accessed on 25 April 2024).

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.