Guidance Value of Marine Functional Zoning System to Allocation of China's Marine Resources

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Abstract The issue of marine resources is receiving closer and closer attention of national marine management authorities. For this issue, it is necessary to seek basis from legal institutions of marine functional zoning system. This paper analyzed basic connotation, development process and basic characteristics of marine functional zoning system, discussed internal relation between marine functional zoning system and marine resource allocation, and studied guidance value of marine functional zoning system to allocation of marine resources.

Key words Marine resources, Resource allocation, Marine management, Marine functional zoning

1 Marine functional zoning system is scientific basis for allocation of marine resources

On March 3, 2012, the *National Marine Functional Zoning* (2011 -2020) was approved by the State Council. This divided marine areas under the jurisdiction of China into 8 functional zones: agricultural and fishing zone, port shipping zone, industrial and urban marine zone, mineral and energy zone, tourism and recreational zone, protected marine zone, special use zone, and reserve zone. It made overall deployment and specific arrangement of development, use and environment protection of marine areas for the year 2011 to 2020[1]. In this study, we take these 8 functional zones as scientific basis for allocation of China's marine resources.

1.1 Connotation of marine functional zoning Marine area is a vertical resource space. It is highly scientific for which is suitable for marine area and what mutual influence there exists[2]. There are three purposes to establish marine functional zoning system. Firstly, it is intended to develop marine economy. Marine area is carrier of development of marine economy. Marine resources are source of marine economic development. Thus, it is required to properly develop marine resources. Secondly, it is intended to protect marine environment. Developing marine economy should not be established at the sacrifice of marine environment. It is required to promote harmonious development of marine resources and marine development. Thirdly, it is intended to solve conflict between industrial use, marine users, and non marine users. Functional zoning focuses on natural factors of ocean, such as geographical position, resource situation, and environment condition of ocean. It also considers social factors of ocean, such as economic development level, and neighboring relations. Besides, it takes scientific evaluation methods and criteria to make orientation of values and functions of the corresponding marine area. Marine functional zoning is different from marine natural zoning made mainly on the basis of natural resources and environmental conditions, and it is also different from marine economic zoning made according to marine economic development situation and social and economic development demands. It is a zoning method between marine natural zoning and economic zoning[3]. *Law of the People's Republic of China on the Administration of the Use of Sea Areas* gives marine functional zoning to a higher legal status, and expressly specified that the use of sea areas shall be in conformity or connection with the functional zoning of the sea.

1.2 Development process and basic characteristics of marine functional zoning In fact, China's marine functional zoning experiences a long time of development process. In August 1979, the State Council approved State Scientific and Technological Commission, State Agricultural Commission, General Staff Department of Central Military Commission, State Bureau of Oceanography, and State Aquatic Product General Bureau to jointly launched comprehensive survey of national littoral zone and mud flat resources. In February 1980, at the enlarged meeting of comprehensive survey of national littoral zone and mud flat resources held by State Bureau of Oceanography, it firstly proposed marine functional zoning. At that time, it was called "proper use zoning of littoral zone and mud flat resources". This is the earliest form of marine functional zoning[4]. Later, the State Council approved Three Programs of the State Bureau of Oceanography in 1988. It assigned the State Bureau of Oceanography with responsibility of organizing drafting marine development plan and comprehensive use plan of key marine areas, and determining marine functional zones together with coastal provinces, autonomous regions, and municipality directly under the Central Government. In order to perform obligations imposed by the State Council in 1988, the State Bureau of Oceanography launched the first time preparation of marine functional zoning in 1989, and finally obtained many substantial achievements, such as Report of China's Marine Functional Zoning, Maps of China's Marine Functional Zoning, and Technical Directives for the *Division of Marine Functional Zones* (GB 17108 - 1997). The first time preparation of marine functional zoning in 1989 basically reveals natural attribute of China's marine areas, and further reflects the relationship between marine

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To further bring into play technological support function of marine functional zoning to marine area use management and marine environment protection, the State Bureau of Oceanography formally launched the second time preparation of national marine functional zoning in May 1998. In October and November 2001, the National Marine Functional Zoning passed review of technical guidance team and leading team meeting of preparation of national marine functional zoning.

On August 22, 2002, the State Council officially approved and issued the *National Marine Functional Zoning*. *The Marine Environment Protection Law of the People's Republic of China* revised in 1999 and *Law of the People's Republic of China on the Administration of the Use of Sea Areas* formally implemented on January 1, 2002 also clearly determined legal status of marine functional zoning. Especially, *Law of the People's Republic of China on the Administration of the Use of Sea Areas* stipulates approval and modification procedures of national marine functional zoning in detail.

With deepening of China's marine development and use and rapid development of marine economy, the State Bureau of Oceanography started the third time preparation of national marine functional zoning taking the first two times preparation of functional zoning as basis, with reference to *Marine Environment Protection Law of the People's Republic of China* and *Law of the People's Republic of China on the Administration of the Use of Sea Areas*. In March 2012, the new *National Marine Functional Zoning* (2011 -2020) was officially approved by the State Council[5]. The new marine functional zoning effectively connects the strategy of promoting marine economic development proposed in the eleventh five year plan and makes comprehensive deployment and specific arrangement for development and use and environment protection of marine areas[6]. In the National Marine Functional Zoning of 2002, there are ten marine functional zones: fishery resource use and conservation zone, port shipping zone, engineering marine zone, mineral resource use zone, tourist zone, sea water resource use zone, ocean energy use zone, ocean protection zone, special use zone, and reserve zone. In the new National Marine Functional Zone of 2012, it improves the ten zones into eight zones: agricultural and fishing zone, port shipping zone, industrial and urban marine zone, mineral and energy zone, tourism and recreational zone, protected marine zone, special use zone, and reserve zone.

2 Analysis on guidance value of marine functional zoning system to allocation of China's marine resources

Resource allocation is combination of resources and combination of resources and other economic elements, allocation situation of resources in different users, and structural arrangement of resources in time, space, and industries[7]. Marine resource allocation is the process of marine resources and use objects. There are two stages of marine resource allocation. The first stage is the stage of unclear functions of marine areas. At this stage, the major task is completely mainly through marine functions. The second stage is the stage after functions of a certain marine area are determined. At this stage, marine functional zoning is still fundamental and scientific basis of marine resource allocation. Therefore, the study on marine functional zoning has guidance value on marine resource allocation. Specifically, it is necessary to study specific requirements of marine resource allocation.

2.1 Marine resource allocation should follow scientific functional zoning system The core of marine functional zoning is based on natural feature of marine areas and also considers social feature. According to requirements of geographical location, natural resources, environment conditions, and social economic development, it is recommended to divide marine areas into different types of functional zones as per scientific functional zoning criteria. Through determining optimum use functions of marine areas and use sequence, it is expected to adjust, control and guide use direction of marine areas, so as to provide scientific basis for reasonable development and use of marine resources. Therefore, the function of marine function zoning is to provide guidance on determining which purpose the marine areas can be used. For example, to ensure there is enough development space in certain marine areas, it is feasible to transfer out those industries not coordinating with the marine area to other areas, avoid disturbing development of leading enterprises. Besides, to properly deal with the relationship between development and use and protection, it is required to set various reservation zone, natural reserve zone, and various reserve zone. Therefore, marine functional zoning should properly deal with the relationship between marine development and use, regulation and protection, local and overall, and short-term and long-term relationship, comprehensively balance benefits of departments and industries, and coordinate conflicts of marine industrial departments and areas, so as to realize sustainable development and use of marine resources, and obtain maximum social, economic, and environmental benefits.

2.2 Marine resource allocation should comply with marine development and use plan of corresponding marine area Marine functional zoning, as scientific basis of China's marine development and management, is also the basis for formulating marine development and use plan[8]. Marine development plan should not violate marine functional zoning and the preparation of marine area development and use plan should comply with marine functional zoning. Marine resource allocation should observe development and use plan of the corresponding marine area. Specifically, the development plan of directly using sea water aquiculture, sea salt industry, and marine tourism should conform to marine functional zoning, and the plan of coastal land use plan, urban plan, and port plan related to marine area use should also be coordinated with marine functional zoning.

2.3 Marine resource allocation should effectively consider demands of current and future resource allocation Marine functional zoning should adhere to following 6 principles[9].

(i) Taking natural feature as primary and social feature as auxiliary. Natural feature and social feature are basic parts of intrinsic features of different marine areas. When dividing marine functional zones, the precondition is based on similar natural features of a specific marine area and difference of different marine areas, while the social feature is auxiliary factor of dividing marine functional zones. If there is no certain natural feature in certain marine area, the marine area is not provided with certain marine functions and thus it is not appropriate to include this area into such functional zones.

(ii) Orientating towards scientific development. It is recommended to control or limit scale of construction use of marine areas, make overall arrangement of industrial use of marine areas, properly optimize distribution of marine primary, secondary and tertiary industries, and save various marine resources in accordance with demands of social and economic development.

(iii) Focusing on protecting fishery. At present, fishery use of marine areas accounts for 60% of marine resource allocation[10]. Fishery resources and ecological environment are foundation of fishery production. Therefore, it is required to ensure no occupation of traditional fishery marine areas, maintain sustainable development of fishery, and ensure increase of fishermen's income and safety and stability of fishery zones.

(iv) Taking environmental protection as precondition. Functional zoning should comprehensively consider protection of marine environment and prevention and control of land based pollution, protect marine ecosystem such as bays, estuaries, island, coastal wetland, and strengthen marine environmental protection and ecological construction.

(v) Making overall arrangement of land and marine areas. Coastline is precious resource of marine areas and must be strictly protected. It is required to make overall arrangement of marine space development and marine area development.

(vi) The national security is the key. Marine rights and interests concern survival of the nation. Thus, it is required to guarantee security of national defense and demand of military use of marine areas and surrounding areas, safeguard marine rights and interests of China.

3 Conclusions

In conclusion, marine functional zoning should establish scientific functional zoning classification system and indicator system, conform to local existing resource development plans, and keep sustainability and continuity of marine resource development. In addition, it is required to take into consideration actual demands and actual technological level of marine development and use, effectively combine present situation and future development trend, and formulate practical and feasible measures for present and future marine resource allocation.

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(From page 69)

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