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# Theory and Practice of Marine Regional Management in China

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**Abstract** With the development of marine economy in coastal provinces and cities, there comes a series of environmental problems. Marine regional management, as a completely new marine management mode, transforms traditional management mode and can protect marine ecosystem. Thus, the marine regional management is feasible and applicable in China. This paper firstly discussed connotation and development of the marine regional management in China and pointed that the marine regional management is integrated management of a certain marine region. Next, it summarized characteristics of the marine regional management at current stage, for example, land-based pollution of trans-geographic system and marine management under regional government cooperative mechanism. Finally, it came up with recommendations including combining theory and practice of the marine regional management, and establishing marine regional management system as soon as possible, to realize benign interaction and sustainable development of marine economy and ecological environment.

**Key words** China, Marine regional management, Theory, Practice

With proposition and implementation of "Marine Rise Strategy" in coastal provinces and cities in recent years, such as Marine Shandong of Shandong Province and Western Taiwan Straits Economic Zone of Fujian Province, China has realized considerable growth in marine economy. However, like problems in the process of development of other industries, marine economy of all regions also has exposed a series of problems in ecological environment and management mechanism. The former is reflected in excessive fishing, spread of Enteromorpha in coastal cities of Shandong in summer, and serious pollution in areas of Yangtze River Delta; the latter is resulted from long-term low efficiency of traditional marine management mode, each acting willfully regardless of overall interest, and seeking maximum internal benefits. Marine regional management, as a marine management mode integrating ecological concept and integrated management technology, has realistic necessity and feasibility. Conducting integrated management of marine regions under jurisdiction in this way is favorable for realizing green GDP of coastal economy.

## 1 Development of China's marine regional management theory

**1.1 Origin and introduction of the marine regional management** In the *Convention for the Conservation of Antarctic Marine Living Resources* issued in 1980, ecological management method was initially adopted. Four years later, Martin Belsky proposed applying ecosystem based management method to marine management, *i. e.* the Ecosystem Based Management (EBM) advocated at the World Summit on Sustainable Development in 2002. In the same year, American scholars Sherman and Alexander introduced concept of Large Marine Ecosystem (LME) stressing protection of marine living resources from the perspective of large ecosystem (the area of large ecosystem should reach  $2 \times 10^5 \text{ km}^2$ ). Apart

from EBM and LME, at the United Nations Conference on Environment and Development (UNCED) held in 1992, coastal countries were asked to implement Integrated Ocean Management (IOM), to realize sustainable development of society, economy and environment.

As a completely new marine management mode, the marine regional management integrates EBM, LME and IOM. Firstly, the marine regional management is development of large marine ecosystem. It narrows management region to controllable range, and overcomes problems of inconvenient implementation of LME because of too broad range. The goal is not limited to management of marine living resources. Next, it still attaches great importance to sustainable ecosystem and the EBM concept runs through the whole process of marine management. Finally, the marine regional management can be regarded as a new development stage of integrated ocean management. Macro management perspective is changing to meso perspective, but the management means still can learn integrated management mode. In view of the above advantages, the marine regional management is feasible and applicable for marine management in China.

**1.2 Connotation and characteristics of the marine regional management** At present, there is still no uniform opinion. "Marine regional management" and "regional marine management" alternately appear in studies, but the latter appears more frequently, indicating domestic scholars like using the wording in American marine policy. Wang Qi proposed using "marine regional management" because it can fully reflect development stage of marine management and prove change of "integrated management" to "regional management". With reference of opinions of Wang Qi, the marine regional management is activity mainly undertaken by government based on safeguarding integrity of marine ecosystem and demand of overall interest of regional development, using legal, administrative and economic ways, coordinating problems faced in the process of marine development, to promote coordination of regional government, related organizations and parties at

interest in ocean-related acts<sup>[1]</sup>.

**1.2.1** The marine regional management is integrated management of a certain marine region. Integrated marine management is high level form of marine management, with overall marine interest of the state as objective, implementing integrated management of space, resource, environment and rights and interests of marine regions under state jurisdiction through development strategies, policies, plan, division, legislation, enforcement and administrative acts, to realize purposes of increasing system functions of ocean development and utilization, coordinated development of marine economy, protecting marine environment and national marine rights and interests<sup>[2]</sup>. The marine regional management specifies the management to a certain marine region, but management in this marine region still needs integrated management method. Therefore, it can be assumed that "marine regional management" is a new stage of "integrated marine management" in the times of economic development. Determining scope of the marine regional management becomes precondition and basis for implementing this new management method.

**1.2.2** It transforms management mode of traditional administrative division. Traditional marine management is management according to purely administrative division. Each performing its own functions is the distinct characteristic. In comparison, the marine regional management transforms traditional practice, determines management scope from protecting structure of marine ecosystem and integrity of functions, and divides complete unit of ocean with ecosystem as the basis. Besides, it comprehensively considers related factors including marine functional division, administrative functions, and historical and cultural factors<sup>[3]</sup>. Further, problem of some offshore pollution is in fact due to careless mistake in management of inland river system. Thus, inland pollution should also be considered. In other words, ecosystem under the marine regional management should be expanded to land. Combining the above factors together, the regional scope can be understood as a certain marine region is not governed by the nearest administrative organ. Once there is problem in this marine region, all marine management authorities in the marine ecosystem can perform management crossing administrative division.

**1.2.3** Ecosystem management is foundation of the marine regional management. The marine ecosystem features mobility and integrity. If ecological pollution like oil leakage occurs in a certain marine region, it will probably lead to damage of near marine region in the action of ocean current and wind direction. For example, the oil pipeline explosion in Dalian in 2010 inflicted great losses on offshore aquaculture and led to death of numerous marine living things. The basis of the marine regional management is ecosystem management, and it considers integrated management of entire ecosystem including human beings, with objective of providing products and services for human beings through keeping health, productivity and vitality of ecosystem<sup>[4]</sup>. The marine regional management based on ecosystem management can realize protection of ecological environment, but also can incorporate marine

economic act of human beings into the framework of sustainable development.

**1.2.4** Sustainable development is objective of the marine regional management. Development of marine economy in coastal provinces has exerted adverse influence on ecological environment. Although "treatment after pollution" has changed to "treatment at the same time of pollution", it still needs establishing sustainable development of marine regional management. The marine regional management starts from the perspective of ecology. It establishes sustainable development of marine management concept. It is expected to realize benign interaction and sustainable development of marine economy and ecological environment through protecting diversity of marine ecological resources, and protecting ecological environment of the ocean and coastal zones in the development and use of marine resources.

**1.3 Exploration of the marine regional management in China** The world marine management system mainly has three types: centralized management, semi-centralized management and easygoing management<sup>[5]</sup>. The United States is the representative of centralized management. Such mode is favorable for making rapid response and decision to marine emergencies and increasing efficiency of marine management. In China, the marine management takes on loose management and cross of government decrees, which are closely related to management mode of industrial sectors. For example, tourism management departments of coastal cities build scenic spots or beach resorts to energetically develop coastal tourism, which results in damage of original ecological marine environment and puzzles management of environmental protection departments. It is clear that there is still no common understanding about healthy development of marine region between marine interest subjects. The understanding is still limited to the frame of self-departmentalism. Therefore, it is urgent to establish coordinating mechanism for all relevant parties of the marine regional management.

Firstly, all marine management authorities in the marine region should form the concept of "common interest of regional marine"<sup>[6]</sup>. Horizontal government should formulate special marine development and management regulations to regulate marine management activities. Vertical industrial management departments should establish communication and cooperation mechanism with government at all levels, for example, ecological and environmental protection policies for certain marine region. Besides, horizontal and vertical industrial departments and government at all levels of a certain region should jointly establish a special marine regional management committee, which is responsible for management of entire marine region to avoid vacancy of management subjects or cross of government decrees.

Secondly, implementation of marine management policies will be undertaken by marine users, because they stay in the forefront and know much more about current development situation of marine resources and ecological environment in the marine region. Therefore, to prevent policies from running counter to interest of

marine users, scholars proposed learning achievements of foreign water resource management in public participation, and encouraging incorporating the public into the marine regional management, to realize diversified marine management subjects, and increase applicability and effectiveness of implementation of marine policies through listening to public opinions.

Thirdly, it is recommended to establish legal protection mechanism for implementation of coordination mechanism. Implementation of any mechanism needs legal protection. For legal construction of coordination mechanism for the marine regional management in China, firstly it needs formulation of national marine policy and legal regulation with the state as the leader and active participation of management departments related to ocean. Secondly, it is recommended to improve related marine management laws and regulations, regulate matters related to the marine regional management, establish coordination mechanism for the marine regional management at legal level, and increase the authority of this mechanism in the marine regional management. Finally, at the operation level, we propose formulating specific coordination schemes to regulate practice of the marine regional management.

2 Practice of the marine regional management in China

The practice of marine regional management in China can be dated back to the year 1965. At that time, for convenience of regional marine management, the State Oceanic Administration set up North China Sea Branch, East China Sea Branch and South China Sea Branch in Qingdao, Ningbo and Guangzhou respectively. The Ministry of Agriculture also set up *Fishery Law Enforcement Command* in the three marine regions, to specially undertake management of fishery production and protection of aquatic animals within

the marine region<sup>[7]</sup>. Later, the practice of China’s marine regional management takes on following characteristics.

**2.1 Land-based pollution of trans-geographic system** Ocean and land are two different natural geographic systems. According to regional scope of the marine regional management, the marine ecosystem can be expanded to land. In China, the protection of marine system also adheres to the principle of combining land and ocean. In line with management of inland river system, the Ministry of Environmental Protection has formulated *Water Pollution Prevention and Control Program for Liaohe River*, *Water Pollution Prevention and Control Program for Haihe River*, and *Water Pollution Prevention and Control Program for Huaihe River*. Also, it has allocated special fund to provinces and cities running through the river system, combining pollution prevention and control of rivers and seas. Table 1 lists specific content of these pollution prevention and control programs.

**2.2 Trans-industrial and trans-departmental joint pollution control** Chaotic situation of the marine management in China is largely resulted from poor communication of industries and departments. In 2011, the joint act of seven departments in risk prevention and control of land-based oil leakage pollution has become a model of trans-industrial and trans-departmental cooperation. After obtaining approval of the State Council, the Ministry of Environmental Protection carried out an overall inspection for land-based oil leakage pollution in coastal regions in cooperation with Ministry of Land and Natural Resources, Ministry of Transport, Ministry of Water Resources, State-owned Assets Supervision and Administration Commission, and other two departments. This act not only improved ability of coastal regions in prevention of oil leakage, but also provided a model example for trans-industrial and trans-departmental marine regional management.

Table 1 Schedule for Water Pollution Prevention and Control Programs

Name	Major official documents	Related provinces and cities	Number of projects	Fund 10 <sup>8</sup> yuan
Water Pollution Prevention and Control Program for Liaohe River	<i>The Tenth-Five Year Plan for Water Pollution Prevention and Control of Liaohe River</i>	Inner Mongolia Autonomous Region, Liaoning, and Jilin	221	188.4
Water Pollution Prevention and Control Program for Haihe River	<i>The Tenth-Five Year Plan for Water Pollution Prevention and Control of Haihe River</i>	Beijing, Tianjin, Hebei, Shanxi, Shandong, and Henan	496	407
Water Pollution Prevention and Control Program for Huaihe River	<i>The Tenth-Five Year Plan for Water Pollution Prevention and Control of Huaihe River</i>	Henan, Shandong, Anhui, and Jiangsu	488	255.9

The above data were arranged according to related documents of the Ministry of Environmental Protection.

**2.3 Action Plan for Clean Bohai Sea crossing administrative division** The *Action Plan for Clean Bohai Sea* is a marine protection document formulated by the State Council in 2001 special for environmental pollution of Bohai Sea. It is one of the key environmental protection works in the Tenth Five-Year Plan period, with total investment up to 55.5 billion yuan and 427 projects. It asked local government and related departments to strengthen coordination and cooperation, strictly control offshore pollution of Bohai Sea, so as to restore clean sea and blue sky of Bohai Sea region. After formulation of these plans, Hebei, Shandong, Liaoning and Tianjin jointly issued a series of management measures, including

Integrated Control Plan for Bohai Sea, Action Plan for Resource Management of Bohai Sea, and Environment Management Strategy for Bohai Sea. Through these policies and documents, it made clear responsibilities and tasks of local government and industrial management departments, providing policy guarantee for practice of the marine regional management and avoiding chaotic management. The Action Plan for Clean Bohai Sea is the initial practice of the marine regional management in China. In 2009, the Ministry of Environmental Protection issued *Outline for Formulation of Twelfth Five-Year Action Plan for Clean Bohai Sea in Coastal Provinces*, asking related regions to prepare Twelfth Five-Year Action

Plan for Clean Bohai Sea in combination with local realities and plans of the state and related departments.

#### 2.4 Marine management under regional government cooperative mechanism

Inter-governmental cooperation in small field is an effective approach for the marine regional management. A typical example is big cleanup action jointly undertaken by Xiamen, Quanzhou, and Zhangzhou government to control spread of Enteromorpha. Oceanic authorities of Xiamen, Quanzhou and Zhangzhou jointly formulated the action plan of "one outline and two systems" and established perfect cooperation framework for the marine regional management, to carry out common management and maintenance of marine ecology near these three cities<sup>[8]</sup>. In summer of 2008, large area of Enteromorpha spread in coastal areas of Qingdao and seriously influenced marine ecosystem and beach tourism industry of Qingdao. Then, Yantai, Weihai and Rizhao offered their help and set up an emergency work team with deputy mayor as commander-in-chief. Finally, they successfully controlled spread of Enteromorpha.

### 3 Conclusions

At present, China has made considerable achievement in the marine regional management from both the theoretical and practical perspective. However, at the same time of breaking restriction of traditional management mode, China should make effort to establish proper marine regional management system with Chinese characteristics. Therefore, in the future marine management, it is still required to take the road of combining theories and practice. Firstly, scholars should continue making theoretical exploration and

providing theoretical support and recommendations for implementing the marine regional management in a larger area. Secondly, the marine regional management should be constantly deepened and reformed under the guidance of these theories, to increase implementation efficiency of China's marine management, establish the marine regional management system as early as possible, and really realize benign interaction and sustainable development of marine economy and marine ecological environment.

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The website feature is mainly focused on famous specialty and ease of use. 78% of the websites do not have the module of famous specialty, and in the released supply and demand information, there are few specialty, organic or pollution-free agricultural products; the main body of transaction of the trading website for agricultural products is enterprises and individual farmers, and the majority of websites have complicated operation and tedious web pages, unable to better meet customer needs.

#### 5.4 The timeliness of information is poor and the closure of website is serious

The case study shows that 12% of websites have been closed down, and the main reason is that there is a shortage of information-based resources in the trading website for agricultural products, the information update cycle is long and there is a serious lack of information. Transaction information is the lifeblood of the trading website for agricultural products, and the timeliness and amount of information are the basis of normal operation of the website. Therefore, the information awareness of agricultural enterprises needs to be constantly enhanced, and the construction level of websites should be constantly improved, which is the problem to be solved for the rapid

and stable development of trading website for agricultural products, and also the key to further realization of agricultural informatization.

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