

Analysis of Multi-stakeholder Equilibrium Motivation of Management Regulation of Marine Protected Areas in China

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Keywords: Marine protected areas; Stakeholder; Ecological protection; Economic society; Sustainable growth

Abstract: This article focuses on the construction of stakeholder equilibrium mechanism under the management regulation of marine protected areas. In the management stage of marine protected areas, it is the key to realize the win-win goal of ecological protection and sustainable economic and social development to balance the interests of multiple subjects such as government, community, enterprises and non-governmental organizations. This article analyzes the core elements of the stakeholders' equilibrium mechanism, and elaborates the connotation and implementation measures of each element in detail, aiming at building a scientific, reasonable and operational framework of the equilibrium mechanism. The article also emphasizes the importance of building a consultation platform, setting a fair distribution plan, strengthening information disclosure, improving regulatory supervision, and designing incentives and compensation measures. Finally, the paper puts forward some suggestions on the regular evaluation of the implementation effect of stakeholder balance mechanism.

1. Introduction

As the frontier position to protect the blue ecological barrier, marine protected areas bear the heavy responsibility of maintaining biodiversity and promoting sustainable utilization of marine resources, and it is also an important practice to realize the concept of harmonious coexistence between man and nature. With the increasingly severe global marine environment and the general awakening of ecological protection consciousness, the construction and management of marine protected areas have become the focus of international attention [1]. As a country with vast sea areas and rich marine resources, China has invested a lot of manpower, material resources and financial resources in the construction of marine protected areas. The implementation of management regulations of marine protected areas is not smooth sailing [2]. It is like a double-edged sword, which not only protects the marine ecology, but also profoundly changes the original pattern of interest distribution. Government, community, enterprises, non-governmental organizations, etc., which play different roles in the development and protection of marine resources. With different interests, these subjects have played a complicated and subtle game around the delineation, management, resource development and utilization of marine protected areas [3].

The conflict of interest under the management and regulation of marine protected areas is rooted in the definition and management of marine resources. Marine resources, as a kind of public resources, the definition of their property rights is often vague, and the value evaluation is also quite different [4]. This provides an opportunity for the disorderly development of resources and intensifies the competition and contradiction among stakeholders. Poor implementation of management regulations, such as lack of supervision and great flexibility in the implementation of regulations, has more fully amplified the risk of conflicts of interest [5]. Information asymmetry is another important factor that leads to the intensification of interest conflicts. Obstacles and cognitive differences in information transmission between different stakeholders make it difficult for all parties to reach a consensus in the decision-making stage, which further aggravates the situation of interest differentiation [6].

This article attempts to analyze the interests of stakeholders, the causes and motivations of conflicts under the management and regulation of marine protected areas, and reveal the deep-seated logic behind conflicts of interests. On this basis, more fully explore the path of building a stakeholder balance mechanism, and provide theoretical support for the scientific management and effective governance of marine protected areas.

The research on the management regulation of marine protected areas first combs the current situation and analyzes the development process, content and effect. Then, pay attention to the interest demands of various interests and explore their expression and role orientation. Then, it analyzes the root causes of conflicts of interest, such as resource definition, regulation implementation and information asymmetry. Finally, based on these analyses, this article puts forward the specific path to build a stakeholder balance mechanism, covering interest coordination, information sharing, and the improvement and implementation of laws and regulations.

2. Current situation of management regulation of marine protected areas

(1) Basis of laws and regulations

The management regulation of China marine protected areas is first embodied in the formulation and implementation of laws and regulations. Since the late 1980s, the state has successively promulgated a series of laws and regulations related to marine protection, such as the Law of the People's Republic of China on the Protection of Marine Environment, the Law of People's Republic of China (PRC) on the Use and Management of Sea Areas and the Regulations on Nature Reserves, which provide a legal basis for the establishment, management and protection of marine protected areas. In particular, the promulgation of the Regulations on Nature Reserves clearly stipulates the delineation, management, protection and legal responsibilities of nature reserves.

(2) Policy planning and layout

At the policy planning level, the China Municipal Government attaches great importance to the strategic layout and scientific planning of marine protected areas. After entering the 21st century, with the implementation of the National Marine Functional Zoning, the Twelfth Five-Year Plan for the Development of National Marine Undertaking and its follow-up plans, marine protected areas have been included as an important part of the national marine development strategy, and it is clearly proposed to strengthen the protection of marine biodiversity and ecological restoration, and build a perfect marine protected area network. These plans define the development goals, spatial layout and key tasks of marine protected areas, and emphasize the importance of cross-sectoral cooperation and social participation [7].

(3) Management organization and mechanism

In terms of management organization and mechanism, China Marine Reserve has implemented a multi-department collaborative and hierarchical management model. At the national level, as the competent department, the Ministry of Natural Resources is responsible for the overall planning, supervision and management of marine protected areas. Local people's governments at all levels and their marine administrative departments are responsible for the daily management and protection of marine protected areas within their respective jurisdictions according to the principle of territorial management [8]. In order to strengthen inter-departmental cooperation, a joint meeting system of marine protected areas has been established to coordinate and solve major problems in management. Furthermore, encourage and support scientific research institutions, universities and non-governmental organizations to participate in scientific research monitoring, education and publicity of marine protected areas.

(4) Implementation effects and challenges

After years of efforts, remarkable achievements have been made in the construction of marine reserves in China. Up to now, hundreds of marine protected areas have been established, including marine nature reserves, marine special reserves, marine parks and other types, covering a variety of ecosystem types from tropical to cold zones, effectively protecting marine biodiversity and promoting the recovery and improvement of marine ecosystems [9]. However, with the increase in the number and scope of marine protected areas, the challenges faced by management and

regulation have become increasingly prominent.

On the one hand, the delineation of marine protected areas often involves the adjustment of complex interests. How to find a balance between protection and development has become a difficult problem for managers. On the other hand, problems such as ineffective implementation of management regulations, insufficient supervision ability and limited capital investment have limited the improvement of management efficiency of marine protected areas.

3. Expression of interest appeal

The implementation of management regulations of marine protected areas, like a prism, reflects the diverse demands of different stakeholders for the utilization and protection of marine resources [10]. These demands are not only a direct reflection of their own interests, but also an indirect evaluation of the rationality and effectiveness of the management regulation of marine protected areas. This section will discuss the expression of interest demands of the government, communities and residents, enterprises and non-governmental organizations under the management and regulation of marine protected areas (see Table 1).

Table 1: Interest Demand Expression Matrix

Stakeholder	Ecological Protection	Economic Development	Livelihood Security	Community Development	Resource Development	Economic Benefits	Environmental Protection	Public Participation
Government	✓✓	✓	-	-	-	-	✓✓	✓
Communities & Residents	✓	-	✓✓	✓✓	-	-	✓	✓
Corporations	-	✓✓	-	-	✓✓	✓✓	✓	-
NGOs	✓✓	-	-	-	-	-	✓✓	✓✓

(Note: ✓ indicates the presence of that interest demand, ✓✓ indicates a strong demand, - indicates no direct demand)

(1) The government's interest demands

The government plays a leading role in the management and regulation of marine protected areas, and its interests are mainly reflected in two aspects: one is the goal of ecological protection, that is, by setting up protected areas, protecting marine biodiversity and maintaining the health of marine ecosystems, so as to achieve long-term ecological security; The second is the demand of economic development, that is, under the premise of protection, rationally develop marine resources, promote the sustained growth of marine economy and meet the needs of social and economic development. This double consideration of the government often needs to find a balance point in policy formulation and implementation, not only to avoid the limitation of economic development caused by over-protection, but also to prevent the damage of over-exploitation to the ecological environment.

(2) The interests of communities and residents

For coastal communities and residents, the ocean is not only a natural resource for their survival, but also an important carrier of cultural heritage and community development. For this reason, their interests mainly focus on livelihood security and community development. On the one hand, they hope that the establishment of marine protected areas will not affect traditional fishing activities and ensure their livelihood sources such as fishing and breeding; On the other hand, they also expect to promote the development of community tourism, ecological education and other related industries with the help of the construction of marine reserves, and improve the overall economic level and quality of life of the community.

(3) Corporate interests

As a direct participant in the development of marine resources, enterprises' interests mainly focus on the maximization of resources development rights and economic benefits [11]. They hope that the delineation and management of marine protected areas can fully consider the legitimate rights and interests of enterprises, avoid unnecessary restrictions and interference, and ensure the continuity and stability of resource development. Furthermore, they also expect the government to provide more policy support and preferential treatment, reduce development costs and improve

economic benefits.

(4) Non-governmental organizations' interest demands

Non-governmental organizations (NGOs) play an important role of supervision and advocacy in the management and regulation of marine protected areas. Their interests are mainly reflected in environmental protection advocacy and public participation. On the one hand, they actively advocate the concept of marine ecological protection and promote the government and all sectors of society to increase their attention and support for marine protected areas; On the other hand, they are committed to raising public awareness and participation in marine protection, and by organizing various public welfare activities and educational projects, they promote the popularization of marine protection knowledge and the promotion of ecological awareness.

4. Motivation of interest conflict

(1) Driven by economic interests

The management and regulation of marine protected areas often restrict the resource development activities in specific areas, such as fishing and oil and gas exploitation. This directly affects the economic interests of communities, enterprises and individuals who depend on these resources for their livelihood. For the government, protecting marine ecology and promoting sustainable growth are long-term goals. For communities and enterprises, especially small fishing communities and enterprises that rely on marine resources, short-term economic benefits may be more intuitive.

(2) Cognitive differences in resources

There are significant differences between different stakeholders in the evaluation and utilization of marine resources. Scientists and environmental protection organizations may pay more attention to the protection of ecological values, emphasizing the integrity and irreplaceability of marine ecosystems. On the other hand, local governments and developers may pay more attention to the economic value of resources and hope to promote local economic development with the help of rational development. This difference in understanding the value of resources has led to fierce debates and conflicts in the delineation of marine protected areas and the formulation of management measures.

(3) Policy-oriented changes

With the improvement of the state's emphasis on ecological environment protection, the policy orientation of marine protected areas has gradually shifted from resource development to ecological protection, which will inevitably lead to the reshaping of the original interest pattern. The uncertainty brought by policy adjustment makes stakeholders disagree on future expectations, which further intensifies the conflict of interests.

(4) The influence of power structure

In the formulation and implementation stage of marine protected area management regulations, the influence and discourse power of different stakeholders are not equal, which leads to the power game in the decision-making stage. As the leader of regulation, the government has the greatest decision-making power. Although communities, enterprises and non-governmental organizations also participate in the decision-making process, their influence is often limited by factors such as organization size, financial strength and social influence. This unbalanced power structure may lead to the decision-making favoring the interests of some powerful interest groups.

5. Stakeholder equilibrium mechanism

To build a stakeholder balance mechanism under the management and regulation of marine protected areas, it is needed to focus on four core elements: interest coordination, information sharing, improvement and implementation of laws and regulations, and incentive and compensation. These elements support each other and together form a complete and dynamic equilibrium mechanism framework. In order to realize the balanced distribution of interests, an effective interest coordination mechanism must be established. This includes holding regular joint meetings with

multi-subjects, setting up special working groups, and establishing an online consultation platform by using modern information technology. With the help of these platforms, all parties can fully express their demands and seek common interests.

Information sharing is the basis of interest coordination. The government should strengthen the openness and transparency of information, regularly publish management reports, policies, regulations and implementation of marine protected areas, and ensure that all stakeholders can obtain relevant information in time. In addition to this factor, it is needed to establish an information feedback mechanism to collect and handle the opinions and suggestions of stakeholders by means of setting up suggestion boxes, online surveys and regular return visits. At the regulatory level, we should constantly improve the laws and regulations related to the management of marine protected areas, clarify the rights and obligations of all parties, and fill the existing legal gaps.

In order to encourage stakeholders to actively participate in the management of marine protected areas, a reasonable incentive and compensation mechanism should be designed. This includes the formulation of ecological compensation policies, reasonable compensation for stakeholders who have been damaged by the construction of marine protected areas, so as to reduce their economic burden and stimulate their enthusiasm for participation. Furthermore, incentive measures will be set up to commend and reward individuals or organizations that have made outstanding achievements in the management of marine protected areas.

It is a complex and systematic task to construct a stakeholder balance mechanism under the management and regulation of marine protected areas. By improving the core elements such as interest coordination, information sharing, improvement and enforcement of laws and regulations, incentive and compensation, we can ensure the reasonable rights and interests of all stakeholders in the management of marine protected areas, and promote the cooperation and benefit sharing among multiple subjects. Table 2 shows the core elements and implementation measures of the stakeholder balance mechanism.

Table 2 Core Elements and Implementation Measures of Stakeholder Balance Mechanism

Core Elements	Implementation Measures	Objectives
Interest Coordination Mechanism	Establish a Multi-Stakeholder Consultation Platform	Facilitate communication and negotiation among diverse stakeholders to identify common interests
	Develop Fair and Reasonable Benefit Distribution Schemes	Ensure the legitimate rights and interests of all stakeholders in marine protected area management are safeguarded
Information Sharing Mechanism	Enhance Transparency in Information Disclosure	Increase the transparency and credibility of marine protected area management regulations
	Establish an Information Feedback Mechanism	Timely collect and address feedback and suggestions from stakeholders to optimize management regulations
Regulatory Improvement and Enforcement Mechanism	Improve Relevant Laws and Regulations	Address legal gaps and enhance the operability and adaptability of laws
	Strengthen Supervision and Law Enforcement	Ensure effective implementation of management regulations and maintain order in marine protected areas
Incentive and Compensation Mechanism	Implement Ecological Compensation Policies	Provide reasonable compensation to stakeholders affected by marine protected area establishment
	Design Incentive Measures	Encourage active participation of stakeholders in marine protected area management to create a positive incentive effect

6. Conclusions

As an important measure to maintain marine biodiversity and promote the healthy and sustainable growth of marine ecosystem, the construction and improvement of management regulations of marine protected areas play a major role. There are differences in management systems, laws and regulations, and implementation mechanisms among countries, but the common goal is to realize the rational protection and utilization of marine resources. As a maritime power, China has made remarkable achievements in the construction of marine protected areas in recent years, but it still faces many challenges, such as interest coordination, information sharing, law enforcement and so on.

For this reason, building a scientific and reasonable stakeholder balance mechanism has become the key to improve the management efficiency of marine protected areas. By strengthening multi-agent communication and cooperation, perfecting mechanism, strengthening supervision and designing incentive measures, the management of marine protected areas can be promoted to be scientific, legal and refined. Looking forward to the future, with the continuous improvement of global marine protection awareness and technology, the management and regulation of marine protected areas will continue to be optimized, contributing to the construction of a harmonious marine ecological civilization between man and nature.

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