

## Stakeholders Involved in Marine Ecotourism Development Patterns

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**KEYWORDS** Benefit Coordination. Benefit Distribution. Ecotourism. Marine. Interests Planning

**ABSTRACT** Marine ecotourism has become a powerful engine for stimulating national economic development of the countries, which are located near the sea. In order to construct reasonable mechanisms of benefit coordination and benefit distribution, this paper analyzes the dislocation and vacancy role of stakeholders, together with the cross and contradictory relationship, which is the key to restricting the development of marine ecotourism. By using the game theory, an essential component of ecosystem-based approaches in marine ecotourism management and the emerging field of marine planning are proposed. The findings show that the demands of the stakeholders, including government, local communities, tourism enterprises and tourists, related to roles and relationships, should be adjusted to be under the constraints of the system, by which the behaviors can be regulated to ensure the sustainable development of marine ecotourism.

### INTRODUCTION

O'Connor et al. (2009) report that 13 million people have participated in swimming and playing with cetaceans (such as whales, dolphins and porpoises) in the world, with an increase rate of 30.5 percent compared to 1998. Marine tourism development is viewed as a promising procedure for tackling developmental and management issues related to the oceans and seas, which are related to coastal and marine tourism (Marilena 2016). With its unique resources and economic value, marine ecotourism increasingly becomes the focus for researchers and participants. In terms of sustainable development, marine ecotourism has become one of the new hotspots and trends in the global tourism industry. Marine ecotourism takes the marine ecological resources as a basis, and a precondition for environmental protection and cultural continuity, which emphasizes on environmental education and community participation to pursuit the new forms of the special tourism of ecological, social and economic coordinated development. It is clear from the current literatures on partnership evaluation that effectiveness is viewed as the cumulative end result of a set of variables acting on a linear process at a specific point in time. However, governance and participation are acknowledged as non-linear and multifaceted processes (Rugayah et al. 2015). In recent years, with the rapid economic and social development,

marine strategies have been proposed and implemented in Peninsula Blue Economic Zones and other zones of China, so that the development of marine ecotourism has become industry choice in some areas. The demands, including all relevant stakeholders within decision-making structures, are recognized during in the first stage of the partnership establishment process. In this context, it is necessary to properly analyze the stakeholders involved in the marine ecotourism development, by which the demands can be identified with investigation of conflicts among various stakeholders. Finally, reasonable measures are put forward to improve coordination among them to ensure the sustainable development of marine ecotourism.

Therefore, the development of marine ecotourism is actually a game process, which is balanced distribution of resources and benefits among the different stakeholders, so that it is also social institution transactions, coordinating the interests of alienation and burden sharing. Many domestic and international cases illustrate that the ability to handle stakeholder issues relating to the marine ecotourism is the key to success. Both view the benefits of marine ecotourism for stakeholders and analyze the relationship between the participation and motivation as the two important premises to establish a reasonable mechanism, as well as to ensure the healthy development of marine ecotourism. Based on the analysis of the general relations

for marine ecotourism benefit stakeholders, this paper focuses on the development of marine ecotourism related to stakeholders to analyze the problems, for which the game theory model is constructed for marine ecotourism development. In order to ensure that the marine ecotourism is sustainable, the existing roles and relationships of stakeholders should be adjusted to ensure the four stakeholders (government, local communities, tourism enterprises and tourists) to be under the constraints of the system to regulate their own behaviors. Finally, a marine ecotourism development model is proposed based on the perspective of stakeholders with game theory.

### Literature Review

There are currently two main deficiencies in monitoring the effectiveness of partnerships in marine ecotourism (Claire et al. 2012). One is that few researchers have attempted to provide tools to measure the achievement of united ingredients, despite considerable literatures identifying the key ingredients for partnership performance. The other is that there is a need of evaluation approaches, which reflect not only on the context of developing marine ecotourism with process and outcomes of a particular partnership, but also the changes in the three components (interest relationship, interest distribution and interest balance). Current approaches cannot enable the impact of changes to be acknowledged during the evaluation of partnership performance. With the introduction of marine ecotourism planning throughout waters issued by some countries, such as UK and USA, there might be a greater reliance on mechanisms (namely partnerships) to facilitate dialogue for successful adoption of plan proposals.

Qu and Xu (2008) believe that coastal ecotourism is the development of ecotourism activities in the marine environment, including the activities of fishing, rafting, adventure, diving, surfing, seafood, experiencing the natural scenery and cultural landscape, involved in offshore and marine exploration. Marine ecotourism is to understand, experience, enjoy, as well as to study marine landscape (including cultural, ecological tourism resources and natural fusion), which not only embodies the understanding and enjoyment of nature, but also reflects the environmental education tour (Li 2005). In addition to common features, as an important part of the ecotourism,

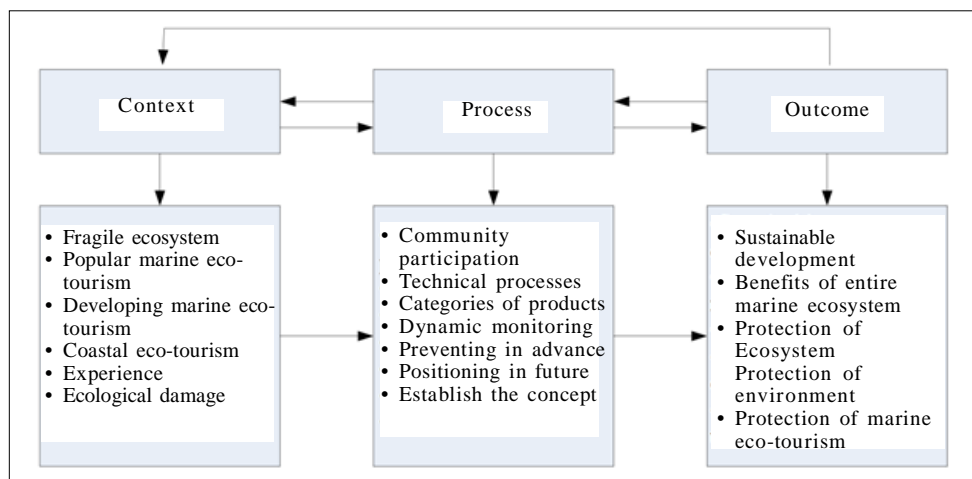
includes unique cultural water, marine natural resources and other characteristics. The product of marine ecotourism is mainly due to the development of the marine ecotourism resources (Qu and Wu 2011). Dong (2001) notes that mangroves are reserve resources of marine ecotourism in discussing the role of the marine ecosystem. With its unique ecotourism value, it may be open for the ecotourism sites. Sheng and Li (2001) focus on five marine ecotourism areas, such as fishing village style, island amusement, sea sports, coastal entertainment, and seawall entertainment with design-related tourism products and services for a whole marine ecotourism plan for the Xiangshan Port Ring. Zhang and Dong (2004) design five categories of fishery products and services including ornamental tourism, participatory tourism, popular science tourism, purchasing tourism and experiencing tourism by virtue of marine fishery and coastal marine tourism resources of Jiangsu, China. The 14 categories of products and services are designed related to the practice of coastal ecotourism. Some experts try to carry out the development of marine ecotourism on preliminary market analysis. The outcomes, however, are less concerned about marine ecotourism market, for which the supply side and demand side of marine ecotourism market have a negative relationship, making the development of marine ecotourism lack of market orientation. Chen (2003) proposes the core idea in the marine ecotourism development, which is the need to implement the principles of marine ecotourism development in conjunction with the regional environmental impact assessment techniques, focusing on preventing improper development, positioning market changes by means of dynamic monitoring and system management. Therefore, the development of marine ecotourism should pay high attention to the technical processes of the environment impact on assessment, taking marine environment protection as the key object, to promote the overall harmonious marine environment. Sheng (1999) analyzes the ecotourism resources development of Techeng Island in Guangdong Province, indicating mold mangrove resources, as a part of the island environment that can be viewed as the development of ecotourism resources on the Island. Resource development and utilization process of marine ecotourism should comply with several principles and orientations. Firstly, the principles and characteristics of the brand should

be exactly orientated. Secondly, industrialization principles of both market orientation and human cultural orientation should be carried on. Thirdly, travel content tends hierarchical principles and scientific orientation. Finally, the principle of marine ecotourism development tends sustainable and green orientation. After the analysis of radiation sandbank coastal areas and marine ecotourism resources in Rudong, Li (2000) found that the different ecological characteristics cause the varying value of marine ecotourism resources. Zhan (2010) analyzes the necessity of the marine ecotourism development in Zhoushan Islands, as well as the problems and the reasons to put forward to establish the concept of marine ecotourism area development, together with development policies and development strategies of marine ecotourism in uninhabited islands.

In recent years, the sustainable development of marine ecotourism has gradually become the development goal of the regional society, economy and environment. Weaver (2000) explores the sustainable development of coastal recreational diving industry, proposing that diving industry activity may have fatal issues to marine ecotourism, which can both destruct the marine ecosystem and destroy traditional ocean culture. Gong (2006) emphasizes the reality is far from fixed or static when analyzing the sustainable development of marine ecotourism in Hainan. Therefore, the project development of marine ecotourism is responsible for consistency of time and space to acquire the benefits of the entire marine ecosystem. Li (2004) obtains the Sustainable Development Index System (SDIS) of ma-

rine ecotourism by the weighted average method of multi-objective, taking the coastal city of Lianyungang. Moreover, an ideal model about sustainable development of marine ecotourism in Lianyungang is “the resources and the environment - community participation - economic development - management and monitoring type”. Zheng (1999) analyzes classification of marine ecotourism in Guangdong, indicating sustainable development of marine ecotourism should emphasize the brand effect. In order to construct a center of coastal tourism city, environmental regulations should be strengthened. Niklitschek et al. (2013) point out that the merits of environmental conditions directly determine the direction and potential of marine ecotourism development in the analysis of contradictory unity between the marine ecotourism and environmental protection. Therefore, the current unsustainable growth of marine tourism development that economic benefits outweigh the environmental benefits should be changed.

It is found that the literatures on the effects of non-consumptive marine ecotourism are fragmented and results from different areas and taxes are frequently contradictory. Most studies appear to be of a few years' duration at most (Wang 2005; Li and Yang 2011). Some outcomes reflect the relative immaturity of the industry with many enterprises within the 1990s. Others of marine ecotourism tend to focus on a focal species with few addressing the wider implications for the associated assemblage. The research results can be concluded in Figure 1.



**Fig. 1. The context, process and outcome of marine eco-tourism researches**

Source: Author

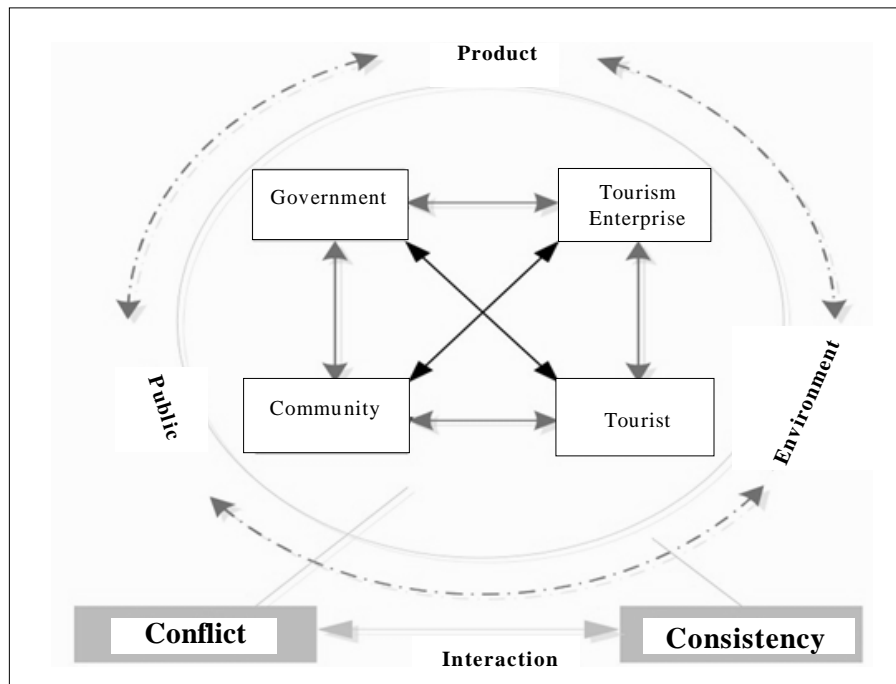
**METHODOLOGY**

In the marine ecotourism areas, the introduction of stakeholder model has originated from the change of the protection concept during the 1970s, when people gradually began to realize that the traditional “protectionist” approach (the marine ecotourism resources are separated from people, and usually they are forced to separation) did not work well. In such regions, such as Santa Maria where shark and manta sightings have declined heavily and with it the satisfaction of tourists, marine protection seems to be especially important (Julia et al. 2016). Therefore, only when the marine ecotourism is viewed as an important stakeholder, the balance of conservation and development can only be effectively addressed. The government of Kenya earlier applied the “stakeholder” theory to solve the distribution of benefits in terms of the relationship among the central government, protected areas, local governments, and local communities. In the late 1980s, with the development of marine ecotourism, the stakeholder theory had been widely used in various regions of the world, and the other stakeholders are further included in the

development of the marine ecotourism (Hoefle, 2014). Thus, the concept of stakeholders currently has to be understood as including protected areas and local communities at the key development-related subject of marine ecotourism. When the stakeholder theories are applied to analyze marine ecotourism problems, which are the parties that affect to determine needs, and which are the legal representatives that balance the needs so as to effectively ensure the marine ecotourism development goals. According to researches, the main stakeholders of sustainable marine ecotourism include local communities, governments, tourism enterprises, tourists, the voluntary sector, experts and the media. In order to facilitate research questions, this paper takes the government, tourism enterprises (tourism companies), local residents and tourists as the four groups of interest, and to study how to form a community among them (See Fig. 2).

**Government**

Governments at all levels put forward stringent requirements to marine ecotourism devel-



**Fig. 2. The four key stakeholders in marine eco-tourism development**  
 Source: Author

opment (tourism enterprises) through legislation, taxation, administrative means and other forms of development and business practices. Meanwhile, the retaining sociopolitical trust is regarded as extremely important for the Chinese government to launch the ambitious reform policies while maintaining social stability (Xia and Lu 2016). Such as on environmental issues, the National People's Congress of China (NPCC) has also passed the "Clean Production Promotion Law" and the "Environmental Impact Assessment Law", making sure that the full control of the environmental model is in the form of national law to set down (Rosenberg and Mcleod 2005). Ensuring the implementation and avoiding major policy mistakes, which are caused by the destruction of the environment need legal protection, by which marine ecotourism planning from short-sighted behavior can be prevented, reducing the likelihood of resorting to development process of the destruction of the ecological environment.

### **Local Communities**

Tourism companies often have to take into account the role of local residents in tourism decision-making in the development process, indicating that if the tourism requirements and benefits of residents are fully taken account, the residents show a tendency to support the further development of marine ecotourism. In the decision-making of community (residents) participation in marine ecotourism development, the most important thing is the participation planning of marine ecotourism development. The marine ecotourism planning is an important part of development, so whether marine ecotourism planning is feasible or not, the size of the implementation of the possibility, is closely related to the attitude of the local community except the close association with the government, legal, finance and other support (Wei and Yan 2008). Community involvement is required in marine ecotourism planning during the development. On the one hand, the development of marine ecotourism can reflect the willingness of the residents, so the host awareness among residents are easy to train, who are more actively to be involved in tourism development. On the other hand, local residents can allow marine ecotourism planning and community factors to be more closely, with more maneuverability. Meanwhile, the participation of local residents in marine ecotourism de-

velopment and the fair and equitable sharing of benefits should be brought about during the development of marine ecotourism.

### **Tourism Enterprises**

The tourism companies, which are engaged in marine ecotourism services, are also the stakeholders of marine ecotourism, including transportation, catering, entertainment, shopping, business and other related businesses. The closest relationship to marine ecotourism is tourism companies (enterprises), whose most important goal is the pursuit of the economic interests. Meanwhile, tourism companies (enterprises) also bring benefits to the marine ecotourism zone. If the relationship between tourism companies (enterprises) and other stakeholders is in poor coordination, the conflicts will be caused, affecting the sustainable development of marine ecotourism. Tourism enterprises of marine ecotourism can also help foster a sense of environmental stewardship by encouraging travelers to be mindful of wasting resources and polluting the environment.

### **Tourists**

Marine ecotourism is either domestic or international, and international marine ecotourism has both incoming and outgoing implications and international cultural exchange. Marine ecotourism is a leisure travel that provides tourists with an educational and adventurous experience of visiting complex and fascinating ecosystems related to local cultures and traditions. Tourists are the main tourism activities with the authenticity and integrity, and travel tickets and travel products and services of marine ecotourism attract the tourists' attention (Fisher and Christopher 2007). The key interests of tourists are the "quality" and "satisfaction" experience of marine ecotourism. With the improvement of quality of tourists, more and more tourists begin to focus on environment and social benefits of marine ecotourism. Marine ecotourism has become a popular global leisure activity. Tourists would return to this very specific touristic destination (marine ecotourism) if the views are easy to reach (Avila et al. 2013).

### **Model Construction**

In this paper, the interests of four groups (government, tourism enterprises or development

companies, local residents and tourists) are taken as research subjects, by which a cooperative mechanism is to be established using the dynamic game. According to the stakeholders' objective analysis of marine ecotourism, the proportion of participants using a strategy of improving of each stakeholder is reflected in game equilibrium. This increase has a positive correlation for participants (stakeholders) to choose the policy to expect revenue resulting. The problem is the study on how stakeholders of marine ecotourism have internal income distribution, and a fair and reasonable incentive mechanism of income distribution is caused. The relationship between community management (government) and members (tourism enterprises, local residents and tourists) can be viewed as a principal-agent relationship, wherein the principal is the top management to oversee the actions and decisions accordingly allocation scheme, and agents choose the actions (such as effort level and output) related to income allocation. In practice, the relationship of principal-agent in marine ecotourism does exist inside. Assuming that there are  $i$  stakeholders (in this paper,  $i$  represents 4 stakeholders, such as government, tourism businesses, local residents and tourists) in a marine ecotourism development, unobservable effort level of a single stakeholder is  $e_i \in E_i(0,1)$ . What would explain the unobservable effort level ( $e_i$ ) is the extent of the efforts of individuals, which have been hidden, and therefore, the effort level ( $e_i$ ) cannot be precisely perceptible. In  $e_i \in E_i(0,1)$ , 0 indicates no hidden individual efforts, while 1 indicates all efforts without being hidden. The individual cost of  $e_i$  is  $C_i(e_i)$  and the function is a strictly increasing differentiable convex function, with  $C_i(0) = 0$  and  $e = (e_1, e_2, \dots, e_n)$  can represent a vector of the effort level of all stakeholders. In the uncertain environment, output depends on not only the vector of effort level, but also the impact of exogenous factors  $Q$ , namely the common output function  $x = x(e, Q)$ . In order to better describe the relationship between the individual effort level and  $e$ ,  $x = x(e, Q)$ , can be assumed to be a strictly increasing slightly concave function, and  $x(0, Q) = 0$ . Assume that represents the stakeholder of marine ecotourism that obtains the share from total output, and each stakeholder is risk-neutral, whose initial wealth is  $W_i$  then the interests increase of the stakeholders involved in marine ecotourism is  $(F(x, e))$ , which is the distribution function of, and the utility function can be expressed as:

$$U_i(S_i, e_i) = W_i + S_i(x) - C_i(e_i) \quad (1)$$

Balanced budget constraint requires that the sum income of each stakeholder and cannot exceed the total output level, namely:

$$\sum_{i=1}^n S_i(x) \leq x(e, Q) \quad (2)$$

Equation (2) is differential by  $x$ , and it can be drawn as:

$$\sum_{i=1}^n S'_i(x) \leq 1 \quad (3)$$

At this point, the sum returns of marginal rate of all stakeholders should not exceed 1, and each stakeholder can independently select to maximize the interests, then the idealized utility function can be drawn as follows:

$$U_i = W_i + S_i(x) - C_i(e_i) \quad (4)$$

The conditions of the first derivative of  $x$  requires:

$$S'_i(x) x'_i = C'_i(e_i) \quad i=1, 2, \dots, n \quad (5)$$

Among them  $S'_i(x) = S'_i/\partial x$ ,  $x'_i = \partial x/\partial e_i$ ,  $C'_i(e_i) = \partial C_i/\partial e_i$ , Pareto optimality requires:

$$e^* = \arg \max (x(e, Q) - \sum_{i=1}^n C_i(e_i)) \quad (6)$$

The conditions of the first derivative require:

$$x_i = C'_i(e_i) = \partial C_i/\partial e_i \quad i=1, 2, \dots, n \quad (7)$$

In the uncertain environment, marine ecotourism cooperation can play a punishment excitation effect as a whole, which can be set up following the model based on community participation:

$$S_i(x) = \begin{cases} a_i x, & x \geq \bar{x} \\ a_i x - b_i, & x < \bar{x} \end{cases} \quad (8)$$

Where  $a_i$  is the partition coefficient of stakeholders, and  $\sum a_i = 1$ ,  $b_i$  is the amount of punishment of stakeholder and  $b_i > 0$ . By Equation (8), the utility function of stakeholder  $i$  can be drawn as:

$$U_i(S_i, e_i) = W_i + E a_i x - b_i F(\bar{x}, e) - C_i(e_i) \quad (9)$$

Where  $E$  is the expectation operator, probability of  $x < \bar{x}$  of  $F(x, e)$  is under a given effort level  $e$ . Suppose that  $e$  is a Pareto optimal effort level:

$$e^* = \arg \max (E x(e) - \sum_{i=1}^n C_i(e_i)) \quad (10)$$

Meanwhile,

$$E_i = x(e) = C'_i(e^*) \quad i=1, 2, \dots, n \quad (11)$$

Where,  $E_i x(e) = \partial E x / \partial e_i$  and the necessary and sufficient conditions of Nash equilibrium require  $\max U_i(S_i, e_i)$ .

$$a_i E_i x(e) - b_i F_i(\bar{x}, e) - C'_i(e_i) = 0 \quad (12)$$

In  $F_i(\bar{x}, e) = \partial F(\bar{x}, e) / \partial e_i$  suppose that  $F(x, e)$  has a range bounded  $W_i$ , and is large enough. By adjusting  $x$  and  $b_i$ , necessary and sufficient conditions of Nash equilibrium is entirely achieved.

able, that is, solutions of Equation (12) belong to the Pareto optimal solutions. Determining the distribution coefficient is a complex process, because it must be combined with various stakeholders in the relative position and the effort level. Thus, the introduction of the output ( $x$ ) and punishment ( $b_j$ ) distribution plan, can not only solve the free-rider problem, but also encourage the stakeholders to help each other achieve the objectives ( $x$ ), to strengthen cohesion within the marine ecotourism development, as well as to actively promote cooperation among the various stakeholders.

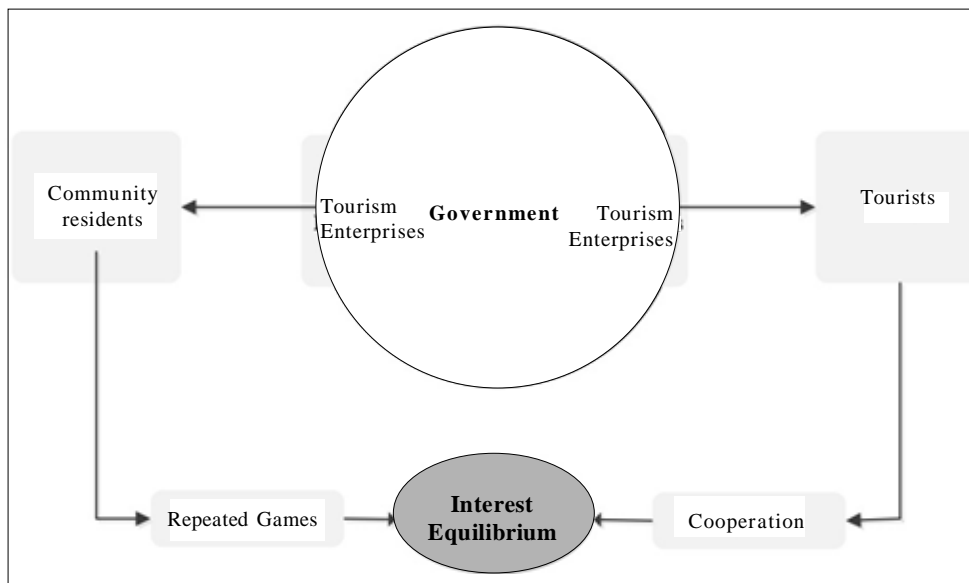
**RESULTS AND DISCUSSION**

According to the foregoing analysis on the marine ecotourism game model of the four key stakeholders, assume the four stakeholders are carried out sequentially, that is, Multi-Game ( $n$ ) of four key stakeholders can be changed into Both-Game in marine ecotourism, which does not affect the essence of the problem. The incentive model affects violations of stakeholders during the integration of marine ecotourism development, which are more effective in practice if the non-cooperative game theory strategy and joint triggering sanctions and other methods are combined. The income distribution of marine ecotourism has been a difficult problem to be solved,

despite the introduction of the target level ( $x$ ) and the amount of punishment ( $b_j$ ), which can help organizations achieve group rationality, the partition coefficient ( $a_i$ ) is more difficult to determine. The application of game theory to the whole process of marine ecotourism development can help policymakers make effective decisions, correct the deviation of the current marine ecotourism “matchmaker” behavior and administrative measures. The specific measures are drawn in Figure 3.

**Government: Coordination**

The marine ecotourism development needs a spokesman for the general interests and objectives to control, to guide, to coordinate as well as to standardize the other stakeholders of the objectives and actions. Only the government is able to undertake this task, especially the central government. In fact, marine ecotourism has an inherently political nature, where the values can be assigned to coordinate with the conflicts, balance of authority, interests, to build the mechanisms of participation and decision-making, to determine standards, as well as to achieve development goal. All what above have distinct political overtones. The government has a powerful tool to influence the marine ecotourism development for legislation, norms (including earn-



**Fig. 3. Multi-Game of four key stakeholders**  
 Source: Author

ing income and distribution of income), coordination of policies, programs and infrastructure, provide incentives, planning and promotions. The existing management systems in China are difficult to ensure the effective management of protecting marine ecotourism (including the tourism industry). Therefore, the overall management from the government is necessary to coordinate with various matters relating to marine ecotourism development. The China National Tourism Administration (CNTA) and the private sector of National Community Tourism Association (NCTA) are both responsible to help the government complete the above functions. At the local level, the Marine Ecotourism Development Committee (MEDC) of the pilot areas of tourism community should supervise the affairs of marine ecotourism development.

#### **Local Communities: Participation**

The local community (residents) is most closely related to marine ecotourism resources and ecological resources, whose participation has a decisive role to the success of community-based marine ecotourism development. Local residents are not only the most affected stakeholders, but also the greatest influence exerted by the environment management of marine ecotourism. When development projects of marine ecotourism can bring economic benefits to local residents, environmental protection mission of marine tourist attractions will receive great supports from local residents, and when residents' interests and tourism development projects of marine ecotourism have a conflict, the environmental protection will have a negative impact. Therefore, in order to achieve sustainable development of marine ecotourism, the appropriate countermeasures should be carried out, such as mission of environmental management, to try and avoid negative factors. In order to encourage the local community to participate in marine ecotourism development, local residents should be included in decision of tourism development, management and benefits sharing system. Interests and demands of the majority of local residents have been the greatest degree of protection to maintain the balance of the local community, to improve community cohesion, as well as to improve local infrastructure with income earned from marine ecotourism development.

#### **Tourism Enterprises: Service**

In order to achieve the ultimate goal of maximizing the interests, tourism enterprises should strengthen the quality of products and services, improve the levels and protect marine environment. From the perspective of protecting the marine tourism resources, social and cultural resources, requiring tourism enterprises have both responsibility and professional competence, both tourism operators and real protection of the marine environment, as well as both economic benefits of operating capacity and environmental awareness. In order to encourage tourism enterprises to do so, benefits (such as providing certification services, tax incentives) should be guaranteed for positive incentives, which can make tourism enterprises standardize operation and management through mandatory requirements (such as protection contracts, franchise qualifications, for violations punishment). In addition, it is necessary to create a community-based industry associations or cooperative network of marine ecotourism to solve problems in the marine ecotourism training, marketing and product development and other aspects.

#### **Tourists: Experience**

Tourists, as a special kind of consumer groups, also show a more pronounced preference for experience. If marine ecological environment has been severely damaged, tourists will not be able to achieve the purpose of "buying" the marine ecotourism products and services. In order to pursue the best tourism experiences, tourists must respect the culture of travel destinations to promote understanding and appreciation of different cultures by contact with the host community. Tourists do not adversely affect the natural environment. Tourists should actively participate in various conservation activities, to maintain and to improve the community environment travel destination through the behaviors. After the tourism activities, the tourists can integrate environmental protection and cultural respect into the sense of real world lives, by which the protection of the diversity of natural and cultural communities can be carried forward to promote sustainable marine ecotourism development.



## CONCLUSION

Marine ecotourism, with the unique tourism resources and the environment, determines an irreplaceable position of tourism industry, which is different from the terrestrial ecotourism where the characteristics of ecotourism lie. Marine ecotourism is an important approach to marine resources and environment of recycling. With the booming and the growing of marine ecotourism, the importance of environmental protection is highlighted during the whole development process. How does one achieve industrial development in the protection of marine ecotourism? Focusing on environmental benefits in the development is that the marine ecotourism development process must face and solve the problems, and it is also ideal for the development of the marine ecotourism that should be achieved. In order to ensure the sustainable development of the marine ecotourism, the need for the existing roles and relationships of stakeholders should be adjusted, and four stakeholders, including government, local communities, tourism enterprises and tourists, should regulate their own behaviors in the regime. Through the stakeholder theory review of development of marine ecotourism development, a game model of Pareto analysis can be carried on among stakeholders, by which the marine ecotourism development model can be proposed based on stakeholder perspective.

## RECOMMENDATIONS

The game theory model is applied to marine ecotourism development. In order to ensure that the marine ecotourism is sustainable, the existing roles and relationships of stakeholders should be adjusted to ensure the government, local communities, tourism enterprises and tourists to be under the constraints of the system to regulate their own behaviors. Therefore, marine ecotourism development model is proposed based on the perspective of stakeholders with game theory. The four stakeholders should regulate their own behaviors to achieve the sustainable development of the marine ecotourism.

## ACKNOWLEDGMENTS

This research project is fully sponsored by the National Social Science Fund Projects of

China (Research on region cluster performance on tourism industry of China) with the Grant No.14AGL015.

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**Paper received for publication on February 2016**  
**Paper accepted for publication on July 2016**