

# On the Precautionary Principle and Sustainable Utilization of Living Marine Resources of China

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## Abstract

The sustainable exploitation and utilization is the emphasis of global living marine resources management. Now more and more international agreements and domestic legislations regard the precautionary principle as a new means of environment and resources management for the principle's conservation effectiveness. For China, living marine resources is not in a good state, though many protecting measures have been taken. And Chinese domestic legislations on living marine resources management haven't stipulated the precautionary principle definitely. Then, it may be necessary for China to make new laws or revise the old ones to regulate the precautionary principle clearly. And it is also essential for China to take concrete measures to apply the precautionary principle in accordance with different conditions of different coastal areas.

**Keywords:** The precautionary principle, Living marine resources, Sustainable utilization

The precautionary principle came from the international environmental law, and the earliest application is to protect environment and cope with pollution. Now its effectiveness on the sustainable exploitation and utilization of resources has also been recognized by the international community. In China, for overfishing and marine pollution long time ago, living marine resources are not in a good state. Then, sustainable utilization and strengthened conservation of living marine resources is the most important task for the Department of Fishery Administration in China. And in this regard, it may be a good way for China to apply the precautionary principle to breakthrough the current management plight.

## 1. The Definition of the Precautionary Principle

Principle 15 of Rio Declaration adopted in the 1992 United Nations Conference on Environment and Development offers a model concept of the precautionary principle, which indicated that "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation".

Of course, there are other definitions of the precautionary principle in other international agreements. For example, article 3 of the Convention on the Protection of Marine Environment of the Baltic Sea regulates that contracting parties shall take precautionary measures to apply the precautionary principle when there are reasonable grounds to assume that substances or energy directly or indirectly introduced into marine environment may bring harm to human health, even when there is no clear evidence for the causal relationship between inputs and effects.

The Convention on the Protection of the Marine Environment of the North-East Atlantic regulates that contracting parties shall apply the precautionary principle when there is reasonable grounds to assume that substances or energy directly or indirectly introduced into marine environment may endanger human health, harm living resources and marine ecosystems, damage amenities, or interfere with other legitimate uses of the sea, even when there is no ultimate evidence of the causal relationship between discharges and influence.

The Convention on the Protection and Use of Trans-boundary Watercourses and International Lakes which was

signed in 1992, is the first international agreement that stipulates the precautionary principle in the form of law. According to article 2, paragraph 5(a) of this convention, “Based on the precautionary principle, the action to avoid the potential impact of the release of hazardous substances to the trans-boundary watercourses must not be postponed, despite the lack of proven scientific causal link between the substances and the trans-boundary impact.”

United Nations Fish Stocks Agreement adopted in 1995 is a convention about living marine resources conservation and management. The article 6 states, “the conservation, management and exploitation of straddling fish stocks and highly migratory fish stocks must be based on the precautionary approach to protect living marine resources and marine environment in every country...the precautionary approach should be taken cautiously when the information is uncertain, unreliable or inadequate. And conservation and management measures must not be postponed or not adopted despite lack of scientific data.”

And the Code of Conduct for Responsible Fishery of 1995 regulate the precautionary principle as a general principle, “The national, sub-regional and regional fishery management organizations should apply the precautionary approach into the protection, management and utilization of the aquatic biological resources, based on the best available scientific data. The organizations should not postponed or not adopted protecting measures on target species, the species associated or dependent on the target species, and non-target species and environment, despite the lack of scientific data.”

Though the precautionary principle’s definitions are different in different international agreements mentioned above, they have contained the same basic elements.

The first basic element of the precautionary principle is cautiousness before acquiring enough scientific evidence and in face of uncertainty of environment changes predications due to lack of scientific data and accurate models. Then the precautionary principle should be taken so long as there are potential risks about environment or resources conservation, even there will be some cost.

The second basic element is reserving definite ecological space, which means that we must reserve some ecological space to cope with the neglect of environment and resources management, because ecosystem accommodation can’t be estimated exactly. In some countries this practice has been transferred into laws and regulations such as the National Water Act (1998) in South Africa, which regulated that the precautionary principle should be adopted to avoid possible damages of water resources.

The third element is strict management policy, which means that it is necessary to pay attention to human activities which could initiate dangers to environment, for that not all environmental decisions’ result could be predicted. Then the strict management policy signifies rigorous control on possible dangerous activities by means of analyzing human activities conscientiously and making decisions prudently.

The fourth element is proof burden transformation. The responsibility of proving the activities which could not damage environment and resources was generally assumed to be taken by the environmentalists and conservationist in the past. While now proof burden is shifted to the initiators who should prove their plans are not harmful to environment and resources.

The fifth element is the balance based on the proportion principle, which means the cost and the benefit caused by the precautionary principle should be balanced according to the proportion principle. In other words, the proportion principle is the basis of the comparison between the cost and the benefit caused by the precautionary principle. What’s more, the possible cost and benefit should be considered, compared and balanced before adopting the precautionary principle.

## **2. The Dilemma of Living Marine Resources Management in China**

At present, living marine resources management in China faces dual pressures from internal and external. Internally, Chinese government has taken a variety of conservation measures to protect living marine resources since People’s Republic of China was founded, such as seasonal fishing-cease, dual control on fishing boats, fishing permit and marine natural reserves, all of which have positive impacts on the settlement of labor surplus and the recovery of living marine resources. However, in the long run, those measures have not reached the satisfactory results, and living marine resources in China did not recover to the expected standard, and even deteriorated in some conditions. For example, the achievement of seasonal fishing-cease is hardly consolidated due to powerful catch just after the summer fishing-cease is ended. And the recovered fishery resources in two or three months fishing moratorium will be exhausted just in a month from the beginning of fishing permission. In addition, although the dual control on fishing vessels has been adopted for many years, the quantity and the power of fishing vessels still increased for the local protectionism and fishing effort increasing with that in the

long term. And the present six minimum mesh sizes in China have not been well implemented. Instead fishing gears meshes in China tend to be smaller and smaller in fact.

Externally, the global living marine resources management came into a new era of exclusive economic zone (EEZ) of 200 nautical miles, since the United Nations Convention on the Law of the Sea (UNCLOS) was enacted in 1982. The Fishery Agreements between China and Japan, between China and South Korea and between China and Vietnam which entered into force in June 2000, in June 2001 and in December 2000 respectively. Since that Chinese fishermen have been forced to withdraw from traditional fishing grounds, such as the Tsushima Straits, Jeju Island, big and small Montenegro, as well as other western waters of the northern Gulf, and return to fish in coastal waters, which means that coastal fishery situation would become even worse undoubtedly. And the traditional fishing grounds of China will be further reduced after official EEZ demarcation between China and Japan, China and South Korea, China and Vietnam. Then for China it is the most important to conserve living marine resources, in addition to leading part of Chinese fishermen to transform career and to find a new way of life. And the precautionary principle may be an effective method to prevent living marine resources degradation.

### **3. The Legislation and Implementation Suggestions for China to Adopt the Precautionary Principle to Realize Sustainable Utilization of Living Marine Resources**

#### *3.1 The Legislation Suggestions*

At present there are only some special laws involving living marine resources conservation and management, such as the Fisheries Law, Marine Environmental Protection Law and Wild Animal Protection Law. But these laws are not sufficient for China to conserve and manage living marine resources well. In this regard, a comprehensive Living Marine Resources Conservation and Management Act should be stipulated in China. Currently, Australia, Japan, South Africa and other countries have stipulated comprehensive laws and legislations of living marine resources management, such as the Living Marine Resources Act of Australia in 1995, the Living Marine Resources Conservation and Management Act of Japan in 1996 and the Living Marine Resources Act of South Africa in 1998.

In the future Living marine resources Conservation and Management Act of China, it is necessary to regulate the precautionary principle as one of the basic principles to guide living marine resources conservation and management.

For now, the laws and legislations in many countries have regarded the precautionary principle as the general principle of living marine resources conservation and marine environmental protection. For example, the Preamble of the Law of the Sea of Canada in 1996 states that “in order to protect marine resources and marine environment, the precautionary principle should be widely applied in marine resources conservation, management and development.” And in Australia the precautionary principle has been regulated as one of the important principles of ecologically sustainable development in the National Ecological Sustainable Development Policies of 1992. And Section 2, Chapter 1 of the Living Marine Resources Act of South Africa in 1998 states that relevant ministers and national institutions have obligations to apply the precautionary principle in living marine resources conservation and management.

At the same time, it is also necessary for China to define the concept of the precautionary principle clearly. For now there has been no consistent concept of the precautionary principle. However, different versions of the precautionary principle have the same essential factors. In a word, it is essential to mind our head and our heart when facing scientific uncertainty. And China should grasp the essence of the precautionary principle when defining its concept in the future Living Marine Resources Conservation and Management Act.

In summary, it could be regulated in the preface or in the body of the future Living Marine Resources Conservation and Management Act that “the precautionary approach should be extensively applied in relating conservation, management and exploitation to protect marine ecological environment and living marine resources.” And “where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent the degradation of living marine resources.”

In addition to make Living marine resources Conservation and Management Act in the future, it is also necessary to promote the revision of the present laws and regulations about living marine resources conservation and management, and the most important one is Fisheries Law of People’s Republic of China. And for this law the most important revision is to stipulate the precautionary principle to guide the protection, proliferation, exploitation and utilization of living marine resources. Concretely speaking, the precautionary principle should

be added in Fisheries Law of People's Republic of China as one of the basic principles for fisheries resources conservation and management first; second, all kinds of precautionary measures should be regulated in the body of Fisheries Law of People's Republic of China, which include fishing prohibiting policy, fishing boats discarding institution, fishing licensing system, total allowable catch, individual transferable quota, precautionary reference point, marine natural reserves and so on. In fact, Fisheries Law of People's Republic of China has regulated most precautionary measures. Therefore, the next important step is to add the precautionary point.

### 3.2 *The Implementation Suggestions*

#### 3.2.1 *Establishing an Integrated Marine Management Department*

At present there is a big problem in Chinese living marine resources management that various marine departments make individual policies and each of them couldn't work together. For example, there are many marine departments in China, such as the State Oceanic Administration of People's Republic of China and the subordinate three management branches of the North Sea, the East Sea and the South Sea, the Border Defense Bureau subject to the Ministry of Public Security, the Administration of Fishery and Fishing Harbor Supervision subject to the Ministry of Agriculture and so on. All these departments are responsible for living marine resources conservation and management within their respective jurisdiction. And this kind of distributed marine management usually causes the waste of persons, finance and materials. And each department usually consider living marine resources development and utilization from their own interests. All of this will hinder living marine resources sustainable utilization and exploitation.

In fact, many countries have already established the comprehensive marine policy-making body, such as American Ocean Policy Committee, Russia Fed Ocean Committee, Korea Ocean and Aquatic Department and so on. As far as China is concerned, it is necessary to merge different departments mentioned above into a General Ocean Administration of PRC to strengthen living marine resources administration, change the traditional decentralized administration pattern, and realize ocean affairs coordination and comprehensive ocean management. Only after founding an integrated marine management department, the precautionary principle could be implemented smoothly in China.

#### 3.2.2 *Applying the Precautionary Principle in Experimental Spots Firstly*

To ensure the precautionary principle being applied all round in China, some precautionary measures could be implemented in coastal areas where living marine resources are decaying gravely, such as Jiao Zhou Bay or Fujian coastal area, both of which are seriously polluted. And different precautionary measures, such as the precautionary reference point, marine nature reserve measure, fishing prohibiting system, catching quota system and so on should be implemented according to different conditions of living marine resources in these coastal areas. Finally according to these experimental effects the precautionary principle could be applied all over Chinese coastal areas step by step.

#### 3.2.3 *Strengthening Scientific Information Collection and Management*

The effective implementation of the precautionary principle should be based on quantities of reliable scientific information. Accurate scientific data could make managers understand living marine resources conditions fully and accurately, and judge the present difficulties of living marine resources management well, which is good for making more effective precautionary decisions. Now the important reason for over-fishing and other phenomena of destroying living marine resources is lack of sufficient scientific information. American National Scientific Committee report in 2002 stated that the neglect of Fishery Management Committee about the scientific information when setting catch quotas limits is the important reason for over-fishing. Then, in other words, we can say that scientific information is crucial to living marine resources management.

The scientific information relating living marine resources management can be mainly classified into two categories: one is necessary information, such as catch records, selling records and observation records during normal fishery activities including leisure fishery and business fishing, and all kinds of useful fishery data offered by the vessel observers, such as fishing methods, fishes and forbidden fishes. The other is non-necessary information, which is collected during the activities other than the normal fishing or is gotten from special investigation vessels with special supervision methods.

China has made some achievements in fishery information accumulation and fishery database development. For example, China has set up some databases about fishing permits, ship registration certificates, pelagic fishery and so on, some of which have been used indeed. Moreover, since 1985 the Fishery Administration of the Agriculture Ministry has established some fishery environment supervision spots in major coastal areas, which

constitute fishery environment supervision network all over China with the hub of the National Fishery Environment Monitoring Center. The fishery environment supervision network offers the Fishery Administration effective technical support, which is good to master the conditions of fishing environment and fishery resources, to protect ecological environment and fishery resources, and to promote fishery sustainable development. Of course, at present there are still some problems in Chinese fishery database, such as less supervision spots, far distance between supervision spots and too long supervision interval, which make it difficult to control living marine resources changes accurately for a whole year. And most fishery databases are not open which makes data sharing difficult.

In the future, China should strengthen information collection and management in the following aspects: firstly, the united living marine resources supervision network should be set up; secondly, the methods and standards of living marine resources supervision should be consistent, and databases should be open and sharing; lastly, it is necessary to increase the transparency of living marine resources management and make some information public, which could make people understand living marine resources management well and supervise living marine resources management at the same time.

### 3.2.4 Establishing Extensive Participation Mechanism

It is not enough to just depend on the relating departments to exploit living marine resources rationally, protect marine ecological environment and promote the implementation of the precautionary principle-in China. There must be considerable public participation, such as the researchers, the companies, the coastal residents, and especially the massive fishermen.

Firstly, the precautionary principle should be publicized through education and various medias. For example, we could increase living marine resources protection knowledge in fundamental education, use public media such as radio, television and other means to popularize living marine resources conservation, strengthen marine protection consciousness of the whole society, especially the coastal residents. What's more, we should also set up living marine resources supervision system to encourage the public to report any action that have damaged or may endanger living marine resources and marine ecological environment.

Secondly, there should be risk assessment and resources evaluation during the precautionary principle implementation. And for China the academic or non-governmental organizations should be allowed to provide independent assessment opinions as references for government to make precautionary decisions. At the same time, a committee composed of relating experts and scholars should be in charge of assessing the damage, the risk and the conditions of living marine resources and offering a report as the scientific foundation for government to take the precautionary principle.

Finally, coastal residents should be encouraged to pay attention to living marine resources management actively. And any action that might harm living marine resources reported by the public should be investigated promptly and even publicized when necessary. And at the same time, the precautionary principle and all kinds of precautionary measures should be explained to fishery companies, fishermen and other people in simple words to encourage them to participate in living marine resources management and conservation actively.

## 4. Conclusion

Living marine resources management all over the world comes into a new period with the key of resources conservation and sustainable utilization after the United Nation Convention on the law of the sea was enacted in 1982. As far as China is concerned, seasonal fishing-cease, dual control on fishing boats, fishing permit, marine natural reserves and other measures have been taken to improve the present poor state of living marine resources. And these measures play an active role in recovering living marine resources in the short term. However, the conditions of coastal living resources is not satisfactory in the long term for that Chinese fishing capacity have not been weakened, but increased. Moreover, Chinese traditional fishery grounds have been further narrowed with the EEZ delimitation between China and the adjacent countries, such as Japan, Korea and Vietnam, which increases the pressure of Chinese coastal living resources exploitation at the same time. Therefore, it is necessary for China to formulate a comprehensive Living Marine Resources Conservation and Management Act and stipulate the precautionary principle as the fundamental principle of living marine resources exploitation and utilization. Meanwhile the precautionary measures should be taken according to different conditions of Chinese coastal areas to change the poor state of Chinese living marine resources conservation and management.

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Table 1. The Revision Suggestions of Fisheries Law of People's Republic of China

The Revision	The Explanation
<p>Article 4 In order to protect fishery resources and water ecological environment, the precautionary approach should be extensively applied in the conservation, management and exploitation of fishery resources.</p> <p>In order to improve fishery resources conservation and management decisions, state fishery administration should take the improved technology regarding to risks and uncertainties on the basis of the best available scientific information. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing or discarding conservation and management measures.</p>	<p>A new article is added after Article 3 in Chapter I, General Provisions of Fisheries Law of People's Republic of China as Article 4 to regulate the precautionary principle as one of the guiding principles for fishery resources conservation and management of and define the precautionary principle clearly.</p>
<p>Article 26 The state shall apply the precautionary approach in fishing. In order to provide scientific basis for making the precautionary plan of fishery resources, The department of fishery administration under the State Council should promote fishery resources data collection and research programs to assess the impact of fishing practices on non-target species and associated or dependent species and their ecological water.</p> <p>In order to review the precautionary measures regularly and timely, departments of fishery administration under People's governments at or above the county level should strengthen fisheries resources monitoring to obtain fishery resources information.</p>	<p>A new article is added after Article 25 in Chapter III Fishing of Fisheries Law of People's Republic of China as Article 26 to regulate the scientific information basis for the precautionary approach application and the regular inspection requirements after taking precautionary measures.</p>
<p>Article 27 In the following conditions, departments of fishery administration under People's governments at or above the county level should take urgent conservation and management measures:</p> <p>(a) A natural phenomenon has significant adverse effects on fisheries resources;</p> <p>(b) Fishing poses serious threat on the sustainable utilization of fisheries resources;</p> <p>Emergency conservation and management measures are only temporary, and should be based on the best available scientific information.</p>	<p>A new article is added after Article 25 in Chapter III Fishing of Fisheries Law of People's Republic of China as Article 27 to regulate in what conditions fishery administration could take emergent conservation and management measures and what these measures' nature is.</p>
<p>Article 28 The department of fishery administration under the State Council and the departments of fishery administration under People's governments at the province, autonomous region and municipality level should extrapolate the estimated value of fisheries resources through the agreed procedures to determine the precautionary reference point as fishery management standard.</p> <p>The precautionary reference point should be made according to specific fishery biomasses. The precautionary reference point of various fishery groups in the seas, territorial waters, exclusive economic zones and other waters of the People's Republic of China should be decided by the department of fishery administration under the State Council and reported to the State</p>	<p>A new article is added after Article 25 in Chapter III Fishing of Fisheries Law of People's Republic of China as Article 28 to define the precautionary reference point and regulate the authorities responsible for setting the precautionary reference point and specific methods to make this point.</p>

<p>Council for approval; the precautionary reference point of various groups in national major rivers and lakes should be decided or consulted by the departments of fishery administration under People's governments in the provinces, autonomous regions and municipalities. Making the precautionary reference points of various fishery groups should take into account, inter alia, the reproductive capacity, the resilience of each stock and the characteristics of fishery stocks as well as the mortality and the uncertainty.</p>	
<p>Article 29 State fishery administration should adopt the following two types of precautionary reference points:                  (a) Limit reference points set boundaries which are intended to constrain harvesting within safe biological limits within which the stocks can produce maximum sustainable yield.                  (b) Target reference points are intended to manage fisheries well.</p>	<p>A new article is added after Article 25 in Chapter III Fishing of Fisheries Law of People's Republic of China as Article 29 to regulate two types of precautionary reference points with the efficacy.</p>
<p>Article 30 The lowest standard of setting limit reference point should be the fishing mortality producing the maximum sustainable yield. For the fish stocks without overfishing, state fishery administration should ensure that fishing mortality do not exceed the level according with the maximum sustainable yield, and ensure the biomass don't drop below the limit. For the fish stocks having been overfished, state fishery administration could make the biomass producing the maximum sustainable yield with the goal to rebuild fish population.</p>	<p>A new article is added after Article 25 in Chapter III Fishing of Fisheries Law of People's Republic of China as Article 30 to regulate the lowest standard of setting limit reference point and the responsibilities of fishery administration to conserve different fish stocks according to the precautionary principle.</p>
<p>Article 31 Management strategies should seek to maintain or restore populations of harvested stocks, and make associated or dependent species consistent with precautionary reference points previously agreed.                  State fishery administration should formulate the executive measures when close to or beyond the precautionary reference point, and should ensure that the risk beyond limit reference point is very low. If fish stocks will drop to or has danger to drop below the limit reference point, state fishery administration should take conservation and management measures to promote fish stocks to be recovered immediately.</p>	<p>A new article is added after Article 25 in Chapter III Fishing of Fisheries Law of People's Republic of China as Article 31 to regulate fishery management objectives and require fishery administration to formulate emergency measures in advance and to take these measures immediately in dangerous conditions.</p>
<p>Article 32 When information for determining the precautionary reference points is poor or absent, the provisional reference points shall be set. The provisional reference points may be established by analogy according to similar and better-known stocks, and the fishery shall be monitored tightly so as to revise the provisional reference points when there is more information available.</p>	<p>A new article is added after Article 25 in Chapter III Fishing of Fisheries Law of People's Republic of China as Article 32 to regulate in what conditions the provisional reference point could be set and how to set it and require subsequent adjustment after setting this point.</p>

This table includes two columns. One is the Revision Column which states the revised regulations and the added ones of Fisheries Law of People's Republic of China (draft). The other is the explanation Column which states the reasons and purposes for the revision and the addition.