CHINESE ATTITUDES TOWARDS THE PROTECTION AND PRESERVATION OF THE MARINE ENVIRONMENT IN THE SOUTH CHINA SEA: A FURTHER ANALYSIS ON CORAL REEF ECOSYSTEMS

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INTRODUCTION

Coral reefs are dying at an alarming rate. Millions of people depend on coral reefs for their sustenance and livelihood, yet this vital ecosystem may soon be lost (Davidson, 2002). While there exists a wide array of national and supranational initiatives that attempt to protect and preserve marine environments, this paper focuses on the Chinese national and international legal instruments that provide for coral reef protection.

Moreover, the present document has been developed under a very relevant international arbitration initiated by The Philippines against the People's Republic of China. In the aforementioned arbitration, one of the submissions that the Government of The Philippines argued is that China's actions in the South China Sea have its

obligations to protect and preserve the marine environment at Scarborough Shoal, Second Thomas Shoal, an Mischief Reef.Part I of this work explains the relevance of coral reefs for the preservation of this important ecosystem. Furthermore, it provides evidence that the reef in the South China Sea has being degraded by human-induced disturbances, resulting in ecological, economic, and cultural losses. Part II examines international conventions that currently address coral reef preservation and other instruments that could be used by the Chinese Government to protect reefs. Part III explains China's construction process on islands and reefs in the South China Sea and provides further information about its conducts and the influences derived from this process. Also, this part presents a comprehensive explanation of China's attitudes towards the protection and preservation of the marine environment in the South China Sea, both from the government and civil society's perspective. Finally, some recommendations are set for increasing the legal protection for coral reefs in light of the crisis that confronts the Governments of The Philippines and China.

I. THE RAINFOREST OF THE SEA: CORAL REEFS

A. Biotic Reefs

To an untrained eye coral, reefs may look like a bunch of rocks, but they are incredibly complex ecosystems of plants and animals that can be found in shallow tropical waters. The process of formation occurs over thousands of years, and it is this slow replacement rate one reason why the current rapid rate if reef decline is so ominous (Ibídem).

Coral reefs are colonial organisms composed of thousands of individual organisms called polyps; hold together by a structural skeleton created by them. Most coral reefs are in a mutualistic relationship with photosynthetic algae called zooxanthellae. These algae supply corals with nutrients, resulted from photosynthesis, for their growth in exchange of a protected environment and compounds they need for their photosynthetic activity. Because of this tight relationship between polyps and algae, coral reefs respond like plants to environmental changes and are very sensitive to them. Coral reefs depend on the clear water with constant circulation, temperatures between 23 and 29º C, and high salinity for their optimal development. These demands restrict the geographical distribution of coral reefs to tropical and subtropical waters, where most of the Earth's biodiversity concentrate (National Ocean Service, 2008).

Coral reefs have been called the tropical rainforests of the oceans; they only cover 0.17 percent of the ocean floor but serve as habitat for up to 25 percent of all marine species. Scientists have identified 93,000 species living in coral reefs and estimate as one million species have yet to be identified. In addition to providing habitat for such a vast biodiversity, they provide habitat for 10 percent of the global fisheries. Coral reefs are under threat from a variety of human activities. Scientists estimate that without preventive actions, 70 percent of the world's coral reefs will be extinct within the next 40 years.

B. Importance of reefs to humans

Coral reefs are among the most diverse organisms. Because of their structural development, they provide habitat for thousands of vertebrate and invertebrate marine species forming one of the most bio-diverse and valuable ecosystems of the world. Not only thousands of marine species depend on them for survival but also many human communities rely on these ecosystems for food, protection, and jobs (Laurens Y. P., 2013). The direct and indirect benefits obtained from the environment that increases human welfare are known as ecosystem services. The economic valuation of such ecosystem services is essential for understanding the implications of conserving and well management of the coral reefs (Costanza R. d.,

1997).

In the South China Sea, Coral reef ecosystems harbor about 400 species of fish and 80 species of corals. This high biodiversity resulted in an environment ideal for productive and recreational activities. Coral reefs provide goods and services worth $375 USD billion globally each year. However, the most remarkable ecosystem services of coral reefs are fisheries and tourism. The attempts of valuation of coral reef have focused on these two activities, although there are more ecosystem services, which are usually overlooked that I will mention later.

Scientists estimated the global average value of coral reef fisheries in $220 USD millions per hectare per year. The fishing in this ecosystem provides food for one billion people in Asia alone. Besides edible products, there are other goods of economic importance, for example, raw materials for medicines. Scientists are increasingly finding biomedical applications for reef organisms, ranging from antidepressant drugs to the use of their substances for the repair of bones. Once again, the high biodiversity of these ecosystems made them a promising place for bio-prospection to find new pharmaceutical compounds that can be used to cure some diseases like cancer, arthritis, and bacterial infections. For example, chemicals from a reef sponge are used in producing AZT a treatment for people with HIV infections (Moberg F. &., 1999).

Reefs also provide a primary source of income around the world

in the form of tourism. Coral reefs attract tourists and help the local communities to develop economically, not only through direct activities such as diving tours and recreational fishing but also through services like hotels and restaurants employing thousands of people. The global value assessed to recreational activities associated with coral reefs is $3,008 USD millions. Once again the revenues generated by tourism varies geographically and depends on how well are developed the infrastructure for services but most important how well conserved and diverse are the coral reefs. In The Philippines, the potential annual revenue from touristic activities ranges from $2,000 – $20,000 USD (White, Philippine coral reefs under threat: lessons learned after 25 years of comm unity-based reef conservation, 2000). Moreover, many local communities sustain their livelihood based on direct-related activities like fishing and tourism. But coral reefs also give other indirect ecosystem values that easily overlook (Marre, 2015).

Besides tangible goods, coral reefs provide environmental services such as shoreline protection against erosion, promotion of the growth of mangroves and sea grass beds that are important refuges for wildlife favoring fisheries. One of the most important ecological services that coral reefs provide is protecting of shorelines from hurricane waves and serving as breakwaters for islands; therefore, destruction of coral reefs can have consequences in the loss of coastlines. The conservation of healthy reefs can save up to $12

million USD for the construction of artificial breakwaters. The Philippine coasts benefited from erosion prevention and loss of infrastructure in an annual range of $50,000 to $250,000 USD (White, Philippine coral reefs under threat: lessons learned after 25 years of comm unity-based reef conservation, 2000).

Other environmental services are biogeochemical functions that take place in these ecosystems like nitrogen fixation, preservation of the ozone layer, CO_2 sequestration, temperature regulation, prevention of ocean acidification and waste assimilation. Nitrogen fixation is essential for the productivity of the ecosystem. Cyanobacteria associated with reefs have the ability to assimilate atmospheric nitrogen at high rates compared to other ecosystems. This process favors not only the productivity of coral reefs but also the productivity of adjacent ecosystems like mangroves due to the release of excess nitrogen fixed. Carbon dioxide sequestration by coral reefs has an impact on climate change regulation by diminishing the effects of phenomena like El Niño and preventing the acidification of the oceans. All these ecosystem services are in danger because coral reefs are sensitive to high inputs of CO_2 originated from human activities. The consequence of excessive CO2 is an increased ratio of organic production, which has led to calcification hindering reef development (Kleypas, 1999).

Due to the sensibility of coral reefs to environmental changes affecting their growth, they are of scientific value for monitoring

climate and pollution. The longevity of these organisms is useful for track changes in salinity and sea surface temperature. They can witness the effects of human disturbance at short and long-term time (Moberg F. &., Ecological goods and services of coral reef ecosystems, 1999). Finally but not of least importance, coral reefs support cultural and spiritual values. Many communities in the tropics developed cultural traditions associated with coral reefs. The protection of reefs of the cultural significance of vulnerable or marginal groups is of paramount importance because these social groups have the knowledge for a rational and sustainable use through traditional practices.

C. Reefs in danger

Despite all the benefits we receive from corals, 58% of the world's reefs are threatened by human activities, ranging from coastal development, overharvesting and exploitation through fisheries, mining, and intense tourisms. Anthropomorphic activities jeopardize the continuity of the ecosystem services they provide in benefit of the human kind. The coral reefs of Southeast Asia are the most diverse yet threatened. Over 80% of the coral reefs of this region are at risk primarily because of coastal development and fisheries (Bryant, 1998)

Coral reefs in the South China Sea are vulnerable to two local

fishing methods, both immensely destructive: blasting and cyanide fishing. Blasting fishing involves the use of dynamite to stun the fish by shock waves and collect them when they float to the surface.

Another method of fishery uses cyanide pin order to kill the fish. The harmful impact of dynamite and cyanide in coral reefs has exacerbated the danger of extinction of this valuable ecosystem (American University , 2016).

Another activity that threatens the coral reefs in the South China Sea is the mining of reefs to extract lime and cement. This kind of extraction is one of the most destructive activities because it does not let the ecosystem recover from exploitation and under no circumstances can be considered as sustainable (Dulvy, 1995).

D. China's environmental obligations to protect and preserve the marine environment as part of the claims in the arbitration of the South China Sea.

As mentioned in the introduction of this paper, members of UNCLOS have the duty to protect and preserve fragile marine environments such as the coral reef in the South China Sea. Currently, the compliance of this obligation has been challenged through an international arbitration that takes places between The Philippines and China. The arbitration mentioned above concerns the role of historical rights and the source of maritime entitlements in the

South China Sea, the status of certain maritime features in the South China Sea and maritime entitlements, and the evaluation of China's activities that might be violating its environmental obligations.

On 22 January 2013, the Department of Foreign Affairs of the Republic of the Philippines presented a note verbal to the Embassy of the People's Republic of China informing that the Philippines had submitted a Notification and Statement of Claim in order to initiate compulsory arbitration proceedings under Article 287 and Annex VII of the United Nations Convention on the Law of the Sea (Calida, 2015)

On March 30, 2014, the Philippines submitted a Memorial addressing both the merits of its claims and the Tribunal's jurisdiction. The Philippines made 15 Submissions on three inter-related matters concerning the relationship between the Philippines and China in the South China Sea. The present paper will pay particular attention to submissions Nº 11 and 12 (b), which concern allegations that China has violated its international obligations to protect and preserve the marine environment. Those two submissions argue that China has harmed the marine environment at Scarborough Shoal, Second Thomas Shoal, and Mischief Reef, by tolerating illegal poaching of marine endangered resources and by the destruction of the fragile ecosystem.

In the development of this paper, particular emphasis was put on the Award on Jurisdiction and Admissibility formulated by the

Arbitral Tribunal constituted under Annex VII to the UNCLOS. In the Award, the Tribunal acknowledged that it is not uncommon in international law that more than one treaty may overlap regarding the obligations to protect and preserve the marine environment and biodiversity. This paper aims to go beyond UNCLOS and identify if other international instruments reinforce the protection of coral reefs in the South China Sea.

II. CHINA'S INTERNATIONAL OBLIGATIONS TO PRESERVE AND PROTECT THE MARINE ENVIRONMENT: THE CASE OF CORAL REEFS.

A variety of international legal instruments either directly or indirectly provide protection for coral reefs. All the conventions presented in this part of the paper offer diverse mechanisms for the protection and preservation of coral reefs and China is a State that has signed and ratified the analyzed conventions.

A. United Nations convention on the law of the Sea

UNCLOS came into force on 16 November 1994, and it is considered the major treaty regarding the use of the ocean and its resources. China ratified the Convention on 7 June 1996 and the Philippines on 4 May 1994. This Convention is considered as the *constitution of the oceans* because it establishes the foundations of the

protection and preservation of the marine environment. Therefore, the former U.S. Secretary of State, Warren Christopher stated, "UNCLOS is the strongest comprehensive environmental treaty in existence or likely to emerge for quite some time" because it deals with conservation and the management of living resources, pollution prevention, vessel pollution, and environmental management (Guruswamy, 1998).

UNCLOS grants the right to establish territorial sea to all coastal States, in a limit that does not exceed 12 nautical miles, measured from baseline. Moreover, the Convention allows states the entitlement to have sovereign rights in an Exclusive Economic Zone out of 200 miles. Because reef formations are limited to shallow waters of no more than fifty meters depth, they tend to occur in internal waters. The geographical conditions place the majority of the coral reefs within some States' internal waters and exclusive jurisdiction zones (Dzidzornu, 1997)

UNCLOS contains many positive obligations that affect marine resources in national waters, such as coral. Part XII of the Convention is focused on the Parties' obligations to protect and preserve the Marine Environment. Article 192 provides a general duty to protect and conserve the marine environment. Article 193 recognizes the sovereign right of States to exploit their natural resources, but this is subject to the obligation to protect and preserve the marine ecosystem. Some of the specific requirements include taking

measures necessary to prevent, reduce and control pollution of the marine environment. Additionally, Article 194 (5) compels the Parties to take extraordinary measures to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.

Scholars have argued that Article 194 (5) should be interpreted as a disposition that creates an obligation for the States to take all the possible measures to protect and preserve rare or fragile ecosystems from all threatens. Additionally, they have argued that it draws particular attention to biotic reef ecosystems needing protection. Although no specific habitat types are specified in UNCLOS, reference is made to rare and fragile ecosystems (Ibídem).

Because UNCLOS was designed to serve as a unifying framework for more detailed international agreements on marine environmental protection and the conservation of marine resources, it is flexible enough to interpret it in coordination to other international instruments. Hence, many of its provisions are augmented by specific regulation, rules and implementing procedures formulated by other international agreements.

UNCLOS is recognized as an umbrella agreement that brings further environmental regulations within its canopy. This feature is reflected in articles 197, 237 and 293, which allow UNCLOS interpretation in light of other international obligations of the signatories.

It is worth mentioning that the Chinese delegation actively participated during the Third United Nations Conference on the Law of the Sea. The delegation submitted a working paper in which it expressed that each State has the right to formulate environmental policies and take all necessary measures to protect its marine environment and prevent pollution in the sea areas under its national jurisdiction. In doing so, the coastal States should regard for the interests of other countries to preserve and protect the marine environment (Keyuan, Implementing marine environmental protection law in China: progress, problems, and prospects., 1999). Based on the provisions mentioned above, it is clear that UNLCOS can be interpreted to protect and preserve the coral reefs in the South China Sea.

B. Convention on international trade in endangered species of wild fauna and flora

In the last decade over 100,000 species have become extinct. The reasons for this calamity are manifold, but the two primary ones are habitat loss and international trade of species. Cross-border trade is a lucrative business that has been carried in an unmitigated way. According to specialists, the market for exotic wildlife is worth at least $5 billion USD annually. As this trade is international in scale,

measures taken by any single country to bring it under control were most often jeopardized by legislative leniency in other jurisdictions. In order to eradicate the depletion of natural resources through international trade, governments from 23 countries proposed a convention that regulated the export, transit, and import of rare and threatened wildlife species, creating the Convention on International Trade in Endangered Species of Wild Fauna and Flora (Guo, CITES implementation in China: Success and Challenges., 2012).

CITES regulates international trade in wild fauna and flora at national levels based on a permit or licensing system for species listed in one of its three Appendices. The permit system is administered jointly by the Management and the Scientific Authorities, which are the core nucleus of the function of CITES. Any international trade of species on the Appendices requires proper permits, and these are only granted if the trade is not detrimental to the survival of the species.

The level of protection afforded depends on the degree of threat that trade presents to each species, and the Convention divides their security into three categories:

1. Appendix I provide the highest level of protection for listed species, allowing trade to take place only when both import and export permits are granted. It includes species threatened with extinction, which are or may be affected by trade, and they are subject to particularly strict regulation in order not to endanger further their

survival.

2. Appendix II permits but regulates trade in listed species. It includes all species which although not necessarily now threatened with extinction may become so unless their trade is subject to strict regulation in order to avoid utilization incompatible with their survival.

3. Appendix III requires a certificate from the country of origin that proposed such as listing. It includes all species, which any Party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as needing the cooperation of the other Parties in the control of trade.

As mentioned before, the Management and the Scientific Authorities are essential for the enforcement of the Convention. These authorities are governmental institutions that implement CITES in each jurisdiction. Management officials for each State party to CITES have the responsibility for granting or denying the issue of CITES permits. Scientific authorities for each signatory advise the management authorities about whether the trade will endanger a species survival. Advice is to be based on population status, distribution, harvest, population trends, other ecological or biological information, and the possibility of trade. Management Authorities cannot issue an import or export permit without first obtaining the information as mentioned earlier.

Even though CITES does not have an international police body

to enforce the obligations to regulate cross-border trade, it requires each signatory to establish a domestic legal framework that implements CITES, including penalizing trade activities that violate the provisions of the treaty. Additionally, under CITES each Party is obliged to compile and submit a detailed annual record of exports and imports of listed species. In case that a State does not comply with its international obligations, the international community can take retaliatory measures restricting the trade against the breaching party, in conjunction with other institutions such as the World Trade Organization.

In 1981, China acceded to the Convention on International Trade in Endangered Species of Wild Fauna and Flora, bringing over-exploitation of fauna and flora trough international trade under surveillance. The Management Authority in China is the Endangered Species Import and Export Management Office of the PRC with offices in Beijing, Chengdu, Fuzhou, Shanghai, and Tianjin.

One major characteristic of this Convention is the fact that recognizes Hong Kong and Macau as parties different from China, with their own mechanisms of control. In contrast, Taiwan is not a contracting party to CITES. Despite this, Taiwan engages in activities on the international scene in a similar fashion to recognized states. The importance of Taiwan for this convention is in a double perspective: On one hand, its Exclusive Economic Zone is rich in natural resources and, on the other it is an important destination for

many of the coral reef species. The Taiwanese Government has taken further steps to implement CITES, and since 1989, the Wildlife Conservation Law allows the Council of Agriculture to undertake comparable responsibilities to a Scientific Authority, and jointly with the Board of Foreign Trade acts as a Management Authority.

Regarding the protection of coral reefs located in the South China Sea, CITES has identified 18 species as critically endangered or endangered; therefore, their trade is prohibited. From the total number, twelve of the species are coral species; the remaining six are animals that live in the coral reef ecosystem: the squat-headed hammerhead shark, knife-tooth sawfish, carnival fish, undulate wrasse, giant clams and hawksbill turtles (Vu H.).

C. Convention on Biological Diversity

Biological diversity is the term used to describe the rich variety of life on Earth in all its forms and at all levels. Pollution and habitat destruction caused by humans have had catastrophic effects on species and habitats, particularly in sensitive ecosystems like biotic reefs. In order to prevent the loss of diversity, the Convention on Biological Diversity was negotiated at the Rio de Janeiro United Nations Conference on the Environment and Development. On 7 November 1996, China ratified the Convention on Biological Diversity.

This instrument recognizes that individual States retain sovereignty over the habitats and species located in their jurisdiction. Nevertheless, such habitats and species are to be regarded as held in trust, and the endowed States have the responsibility of their conservation on behalf of all humankind, both for present and future generations.

The signatory States are constrained to protect and preserve the Biological Diversity within their jurisdiction. The administration of the natural resources is determined in accordance with the particular habitat, and coral reef ecosystems have to be managed according to UNCLOS. Therefore, the obligation to preserve corals rests in the State in which national waters or Exclusive Economic Zone corals can be found.

The requirement to conserve the biological diversity is contained in articles 1, 6 and 7 of the Convention. Under Article 6, the signatory State must produce new, or adapt existing strategies, plans or programs for conserving the biodiversity and using it in a sustainable manner. The conservation of biological diversity and its sustainable use must be integrated into relevant sectoral plans, policies, and programs. Article 7 imposes constraints on the State in order to monitor the ecosystem that requires urgent conservation and identifies processes and activities that have or are likely to have a significant impact on the preservation of biodiversity. These articles create an obligation capable of being monitored by the international

community through requesting the Parties the data that sustains their conservation plans. Annex I of the CDB puts a particular regard to protecting ecosystems that contain high diversity, a large number of endangered or endemic species. It is relevant to clarify that the international community has identified that coral ecosystems both contain great diversity and a large number of endemic and endangered species (McManus, 1988).

The jurisdiction of the CDB has a significant overlap between its text and other international treaties, such as UNCLOS or CITES. According to internationalist scholars, this situation throws up important questions about the relationship between these instruments and their applicability when a State finds itself a party to two or more conventions. The analysis has to be done based on the Vienna Convention on the Law of Treaties, which establishes on article 30 (3) that where the States are parties to two or more treaties, the earlier instrument applies only as far as provisions are compatible with the latter. Nevertheless, the Vienna Convention rules can be displaced by specific provisions within a treaty. Accordingly, Article 22 (1) of the CBD mandates that the CDB shall not affect the rights and obligations of any Contracting Party deriving from any existing international agreement except where the exercise of those rights and obligations would cause severe damage or threat to biological diversity. States are therefore expected to meet both their commitments under the CBD and other international conventions.

Under Article 22 (2) the contracting parties shall implement the Convention with respect to the marine environment consistently with the rights and obligations of States under the law of the sea; in the case of China's requirements are those must be consistent with UNCLOS. Fortunately, there is no problem with the compatibility of these two treaties because both address the conservation of the marine environment.

The success of guaranteeing the protection of biological diversity relies on the authority of the Conference of the Parties. Article 14 provides that the Conference must be held bi- annually in order to review the implementation of the Convention, and based on the information gathered; it can declare liability and redress, including restoration and compensation. Nevertheless, assessing compliance is tough for the Conference of the Parties given that there is no particular system for identifying non-compliance. Moreover, the assessment of conformity is only based on the material provided by the State whose actions and policies are analyzed. Experts on international environmental law have stated that sometimes the reports furnished by the governments are not completely transparent and do not reflect the reality (23 Guruswamy, 1988).

Another feature that has made the CBD successful is the possibility for the COP to designate Marine Protected Areas, MPA. The Technical Expert Group of the CDB has defined MPAs as any designated area of the marine environment, together with its

overlying waters and associated fauna, flora and historical and cultural features, which has been reserved by legislation of other effective means, with the effect that its marine biodiversity enjoys a higher level of protection than its surroundings. Pursuant to the CBD, coral reefs in the South China Sea can qualify to be considered as MPA because of two main reasons: The first reason is to help protect and preserve the ecosystem. If the reefs of the region mentioned above get the MPA status, the corals could be protected arguing that their particular treatment would conserve diverse marine species, safeguard life-support process of the sea and preserve the site from human impacts to enable it to recover from stress. The second function is more accurate to its contributions to the local communities, which is to help maintain viable fisheries, along with traditional fisheries.

D. United nations convention concerning the protection of the world cultural and natural heritage

On 17, December 1975, the Convention Concerning the Protection of the World Cultural and Natural Heritage entered into force. This convention expressly protects the global and intergenerational interests of humankind in the world´s heritage.

The agreement contemplates sites of natural significance that are the centerpiece for the preservation of wildlife as world heritage.

Article 2 defines natural heritage as:

> i. Natural features consisting of physical and biological formations of outstanding universal value, whether scientifically or aesthetically;
>
> ii. The habitat of threatened species of plants and animals that are of outstanding universal value in terms of science or conservation; and
>
> iii. Natural sites or areas of outstanding universal value from the point of view of science, conservation or natural beauty.

According to Article 3 of the Convention, the authority for identifying and delineating the sites that meet this definition is left to the contracting party and is limited to areas situated within that state's territory. Once a property has been identified by a State, it has the obligation to protect, preserve and transfer the natural heritage to future generations. Those duties are further elaborated in Article 5 whereby states must adopt a policy of giving natural heritage a function in the life of the community and set up that there exists a responsible agency with appropriate staff and means to protect and conserve the natural heritage. Article 6 imposes the obligation owed by all contracting parties to respect the heritage situated outside their territory, and imposes the duty of refraining from causing direct or indirect damage to the natural heritage located in the territory of another participating state.

Regarding the obligation to protect the natural heritage, it confers a duty to prevent a specific threat that may cause damage to the site and concern for the welfare of the animals. The obligation to preserve the natural heritage imply that all resources in the area may be used in a sustainable manner so that they may be enjoyed by present generations while maintaining its potential to meet the needs of future generations.

The primary player to supervise the enforcement of the Convention is the World Heritage Committee. This body, composed of only 21 members, has all the substantive powers and capacity to pull states towards compliance with its obligations. The Committee has power over initial access to the World Heritage List, the awards of grants from the fund, and the authority to remove access to benefit altogether. The great difference between this Committee and the COP from the CBD is that the first one receives institutional reporting from the Parties, but also assesses reactive monitoring. Additionally, it receives reports from third parties, such as Non-Governmental Organizations.

China and the Philippines have ratified the Convention, the first on 12 December 1985 and the later on 19 September 1985. Even though China has no coral reefs protected under the World Heritage, the Philippines were inscribed on account of the Tubbataha Reef being due to the outstanding ecosystem and beauty that it holds.

Considering that the reefs in the South China Sea sustain a mega-

diverse population of species, and its extreme beauty, they can be proposed to become a World Heritage Reservoir.

A. Attitudes from the international community towards the construction of "artificial islands" in the South China Sea

The International Community recognizes that the Spratly Islands are located between 50 and 350 nautical miles from the Philippine island of Palawan and more than 550 nautical miles from the Chinese island of Hainan. Furthermore, it is acknowledged that the Spratly Islands are a group of approximately 50 small features, many which are submerged reefs, banks, and low tide elevations.

The International Community argues that within the maritime area encompassed by the "nine-dash line", China has occupied and built structures on certain submerged banks, reef, and low tide elevations. The international community has evidence that since 1995, China has occupied certain coral projections that are above water at high tide in the Spratly Islands. In that area, China has constructed artificial islands over submerged features, particularly in the Mischief Reef and McKenna Reef. In these two reefs, China has built facilities on stilts and concrete platforms. The latest island China has just completed at Mischief Reef is more than 9 kilometers long,

and it was built over living reef.

China's policy to construct islands in the South China Sea has increased in speed and scale since 2015. In June of that year, the Chinese Government announced that it has finished the process of building seven new islands by moving sediment from the seafloor to the reef, some of them biotic oyster or coral reefs. China said that it would focus on building ports, airstrips, radar facilities and other buildings on the islands (Watkins, 2016).

Several reefs have been destroyed outright to serve as a foundation for the new islands, and the construction process also provokes extensive damage to the surrounding marine ecosystem. The procedure to build the islands consists of three main steps: 1. A ship brakes up and siphons the sediment from the seabed; 2. The sediment is transported through a floating pipe; and 3. The dredged material is deposited on the top of the reef. According to biological experts, some portion of the sediment remains in the sea, forming plumes that can smother marine life and could be combined with heavy metals, oil and other chemicals from the ships and shore facilities being built. Such plumes threaten the biologically diverse reefs throughout the South China Sea because the biotic species may have trouble surviving in sediment-laden water (Ibídem).

B. **A**ttitudes from the international community towards china's exploitation and extraction of natural resources in

the South China Sea

The marine life in the South China Sea is diverse and bountiful and is a region where aquatic migratory and resident species spawn, feed and overwinter. In the region, there are over 1,787 species of marine animal life and around are depleted, threatened or endangered (Magno, 1997).

Scarborough Shoal, located approximately 120 M west of the Philippines' coast and 350 M from China, is a submerged coral reef with six small protrusions above sea level at high tide. In this area, Chinese vessels have harvested endangered species such as sea turtles, sharks, and giant clams, which are protected by international law.

According to the Memorial submitted by the Philippines on 30 March 2014, China has failed to protect and preserve the marine environment on this shoal because the Chinese government either believes its fishermen are acting lawfully, or it does not care that they are acting unlawfully and harming the environment (Magno, 1997). Furthermore, the Philippines has demonstrated that Chinese fishermen use dangerous substances such as dynamite or cyanide to extract fish, clams, or corals at and around Scarborough Shoal.

There is evidence that since 1995, Chinese fishing vessels have been apprehended in the Spratly Islands carrying sea turtles, which are included in the international list of endangered species.

In the area of the Spratly Islands, there is evidence that a dozen of Chinese boats had chained their boats to the reef and had been revving their engines to pull the coral to break the reef. The result has been complete devastation; in an area in which had once been a vibrant coral ecosystem, since the Chinese intervention, the sea floor is covered in thick layer of debris and millions of broken fragments of coral. The reason for this action is to harvest giant clams which from their size, they are probably 100 years old (Wingfield-Hayes, 2015).

Chinese fishermen have a long tradition of fishing in the Scarborough Reef and the Spratly Islands, nevertheless, since 2013 they have destroyed the reef because looting and trading endangered species is more profitable than catching fish. In May 2014, the Philippine police found a boat from Tanmen, the largest fishing port on Hainan, carrying 500 Hawksbill sea turtles, most of them dead. Hawksbill turtles are critically endangered and protected under CITES.

A Philippine court sentenced the nine Chinese poachers to a year in prison. The Chinese Government demanded the convicted poachers be immediately released and accused the Philippines of severely violating China's sovereignty by illegally detaining Chinese fishing vessels and fishermen in international waters (Ibídem).

Researches have been conducted regarding the exploitation of coral reefs ecosystems to provide the international trade market. Global demand for coral reef products in the South China Sea is

originated in five sectors: luxury live food; aquarium and ornamental display; curiosities; traditional medicine and bio-prospecting (Goodwin)

III. CHINESE ATTITUDES TOWARDS THE CONSTRUCTION OF PROJECTS AND RELATED MARINE ISSUES IN THE SOUTH CHINA SEA

A. China's Marine Environment in the South China Sea

1. Summary

According to *2014 Communiqué of the Marine Environment of the South China Sea* (Communique of the Marine Environment of the South China Sea", the South China Sea Branch of China Oceanic Administration, 2014) released by the South China Sea Branch of China Oceanic Administration ("South China Sea Branch"), the general marine environment in the South China Sea was good while there was severe pollution in some portions of coastal waters. Specifically speaking, the water pollution of coastal waters and excessive land-sourcing pollutants emitted into the sea along with other environmental issues are still prominent. Pearl River Estuary

pollution was still dangerous, most waters of which area showed severe eutrophication. Some Coral reefs and sea grass beds ecosystems are degraded. The discharge rate of the compliance land-sourcing pollutants emitted to the sea was still not high; the environment situation of the adjacent sea area around the main sewage outfall had no visible improvement compared to that in 2013. Adversely affected by the typhoon, the degree of coastal erosion of the monitored coastal area became even worse. (Ji Yanqing, 2015)

2. The impacts on the marine environment resulting from the construction of **"artificial island"**

(1) China's construction in the south china south

a. Huge amounts

There is no official disclosure regarding the current status, numbers, area or other information of the "artificial islands" constructed by China. According to some unofficial sources, since 2014, China has enhanced its efforts on the construction in the South China Sea. Only taking Nansha, Xisha, Zhongsha, and Nansha Islands into consideration, there are more than 300 islands and reefs, among which, almost 100 islands and reefs are suitable for constructing artificial islands. ("So Many Artificial Islands Made in

the South China Sea,")

b. Strong functions

The most eye-catching project under construction in China is "Double Fish Island", which will be built into a new landmark in Xiamen Bay. The Double Fish Island project, located on the Da Pan Shoals in China Merchants Group Zhangzhou Development Zone Section II, is the first commercial sea project, the first offshore project approved by the State Council, and currently the largest offshore island in the world. Double Fish Island will feature a design of two dolphins circling each other, boasts a huge investment of 3 billion yuan. With a total planning area of about 2.2 square kilometers and a radius of 840 meters, the double dolphin-shaped island will cover an area of 222 hectares and enjoy a coastline of 11.4 kilometers. The island will require 33,370,000 cubic meters reclamation. Also, this island will be forged into a high-end ecological resort featuring lifestyle, leisure, health and tourism resources (Team, 2012).

Last but not least, Double Fish Island is the first project, which is approved to use the sea for the operational goal by the State Council.

It is clear that China does have the capacity to invest a huge amount of money, human resources and time in the construction of

artificial islands. Also, the use of such islands is not limited to nation defense or territory consideration; China even starts to explore economic benefits from the utility of the sea.

c. Surprising Speed

Fiery Cross Reef (also known as Yongshu Island) was completely underwater until August 2014 when Chinese Dredgers began to dig up the surrounding sediment. Before construction began, the Chinese presence consisted of a single concrete bunker on the reef's southwest end, but this island has since become the largest in the Spratly chain, measuring nearly 2.3 square kilometers. The new island includes a nearly two-mile-long strip of land that appears to be the future site of an airfield (Rosen, 2015). The English Press, *Jane's Defense Weekly*, found that during the period from February 2004 to January 2015, a 75,000 square meters artificially island appeared other than a 380 square meters' concrete platform in 2004, i.e. the artificial island has been enlarged nearly 200 times within 11 years (International Financial News, 2015)

d. Huge expenses

Regarding the expenses incurred from constructing an artificial island with 62 square kilometers land area, 6.5 sq. Km Lake areas,

35.5 kilometers harbor area, i.e. 104 square kilometers in total, some experts in China think that the figure is approximately 73.6 billion yuan.

More specific, when constructing an artificial island, apart from the caissons required for cofferdam, the main raw material is the earth, basically from domestic. About the bulk freight rates, transporting the earth from the Mainland China to Fiery Cross Reef would cost 75 yuan per cubic meter, and the other raw materials would cost approximately 41 yuan per cubic meter. Thus, the final unit cost of reclamation with earthmoving is 116 yuan per cubic meter.

Based on the current construction plan, the atoll area, which can be built into land, is around 62.5 square kilometers. This area can be calculated into three categories: category one with around 1-meter water depth accounts for 5.96 square kilometers; category two with around 5- meter water depth accounts for 26.93 square kilometers; group three with around 10-meter water depth accounts for 29.11 square kilometers. Based on the calculation, 611.75 million cubic meters of the earth is required to fill out a land, which is on average 3 meters above the water, costing 70.963 billion yuan. Besides, adding the cost of other raw materials, the total cost would be 73.6 billion yuan.

In conclusion, 73.6 billion yuan is required to build an artificial island with a total area of about 104 square kilometers. The above

calculation only includes the expensed to be incurred for the construction, let alone individual funds required for other facilities on the island (International Financial News, 2015).

(2) China's conducts in the construction projects

According to Dr. John Mcmanus, a University of Miami marine biologist while building on the reefs is not new, China's large-scale construction of a military base and runways is resulting in unprecedented environmental damage. (Sant, 2016)

Doctor Mcmanus claimed that, between 2012 and 2015, Chinese fishermen have used large, extended propellers affixed to utility boats to chop the reefs and prepare for the construction of artificial island. Also, Dr. Mcmanus pointed out that large areas of coral reef were being buried, in the end; it was almost 13 square kilometers, 13 million square meters that were destroyed, just concerning being buried under these islands. This situation caused considerable concern among the international community. (Wingfield-Hayes R.)

"The damage to the coral reefs caused by the Chinese reclamation in the West Philippine Sea is 600 times larger than the damage brought by USS *Guardian* on Tubbataha Reef" according to estimates by the Bureau of Fisheries and Aquatic Resources ("BFAR"). Also, based on BFAR Director Asis Perez's study, it would take thousands of years for the reef to re-grow (Musico, 2015)

(3) Influences on marine environment

As we all know, human impact on the coral reef is significant, and coral reefs are dying around the world. Digging of canals and access into islands and bays are serious threats to the ecosystem. Also, from the chopping, coral reefs also face high dangers from diseases.

There are a certain amount of potential risks from constructing artificial islands. Firstly, the marine environment has been changed as a result of the construction of the islands because it changes the hydrodynamic circumstances of the surrounding waters, creating further alterations in the marine life, water exchange, Seabed topography and other features in the ecosystem. Secondly, the construction of the islands destroys the nearby fisheries resources.

Furthermore, the daily usage and occupancy of the artificial islands might generate a lot of sewage and garbage increasing the pollution in the nearby waters (Shengli, 2008)

3. The impacts on marine environments resulting from china's exploitation of marine resources

(1) Summary of china's marine resources

China is one of the countries in the world that possesses abundant marine biology resources, and those resources have become a critical underpinning to implement sustained marine economy development. (Fucheng, 2012) Also, China is pursuing the objective of enhancing its long- term resource security by ensuring its control over most of the South China Sea's living and nonliving resources. (Ibídem) China has a vast sea area, extending nearly 44 degrees of latitude from north to south with a coastline of over 32,000 kilometers, of which the mainland coastline is more than 18,000 kilometers, the island coastline is about 14,000 kilometers. The sea area which is adjacent to the mainland can be divided into the South China Sea, East China Sea, Yellow Sea and the Bohai Sea from south to north, with a total area of about 470 square kilometers (Dutton, 2011).

In the South China Sea, oil and gas are the most valuable natural resources. Additionally, fishery stocks constitute an insufficiently recognized economic and symbolic element of the dispute between China and Philippines. (Fabinyi, 2015)

a. Biology perspective

From the biology perspective, the marine biology resources include fish resources, invertebrates' resources, vertebrates' resources, and algae.

The biological yield of China Sea Depositor is nearly 2.7 tons

per kilometers, the total biological yield is 1.3 multiple 107 tons, the sea planktonic algae which have been confirmed is more than 1,500 categories, and marine animals are 12,500 categories in total. China's fishing field is one of the largest in the world. The annual fishing amount is more than 5 million tons,

which is also the critical resource to develop offshore mariculture and sea ranches, and create a food-supplying base with strategic significance (Jianzhen, 2010).

b. Offshore oil and gas resources

In 2011, China's offshore oil and gas production exceeded 50 million tons, accounting for nearly 20% of China's annual output of oil and gas. In the past few years, China has gradually announced some developing bidding blocks for deep-sea oil and gas. In 2011 and 2012, a total of 54 blocks has been released with a total area of 286 thousand square kilometers. China's first self-designed and built deep-water, semi-submersible drilling rig "sea oil 981", started to drill 320 km from Hong Kong's southeast, in Liwan 6-1-1 well, marking China's substantial progress of deep-water oil and gas exploration. (Ibídem)

Based on a World Bank Research, the South China Sea holds proven oil reserves of at least seven billion barrels and an estimated 900 trillion cubic feet of natural gas, which both offer tremendous economic benefits for neighbor countries such as Malaysia, the

Philippines, and Vietnam. Ultimately, the availability of energy resources is crucial for China to secure its economic development. (Ibídem)

c. Marine renewable energy tidal power

Tidal Power is the most mature technology of China's marine renewable energy development. The country has long-term experience in the operation, management, and maintenance of this energy process. China's national tidal power's total installed capacity was 6,000 kW in 2013, ranking the third largest in the world (Miaozhuang, 2012).

(2) China's conducts

In June 2011, Vietnam accused a Chinese fishing boat of cutting cables from an oil exploration vessel inside its Exclusive Economic Zone. Such kind of hostilities resurfaced in May 2014 when Chinese vessels fired water cannons at a Vietnamese flotilla that allegedly approached a large Chinese drilling rig near Paracel Island. (Ibídem)

Apart from oil exploration, there have been continuous small-scale fishing incidents, which have become the hub of marine confrontations, particularly, those related to declining fish stocks. Those conditions have driven fishermen further into disputed areas to

search for supplies and some more profitable protected species. In April 2012, the Philippines' naval force intercepted eight Chinese fishing vessels in the Scarborough Shoal, finding protected marine species on board. (Ibídem)

Since 1995, the Chinese's government has conducted several scientific research projects and has accumulated vast information regarding the marine environment in the South China Sea. Based on that data, the Chinese government has recognized that several natural factors, such as water temperature, circulation patterns, ocean chemistry, sea level, tropical cyclones and abnormal climate have severely influenced the distribution, structure, and functions of coral reef communities. The Chinese authorities recognize that the threaten to the survival of coral reefs in the South China Sea is exponentially increased by anthropomorphic activities such as overfishing, illegal destruction, and excessive tourism development. Nevertheless, the Chinese governmental position is that the main reason for coral reef degradation is based on natural factors rather than on human activities (The Xinhua Net, 2015).

(3) Influences on marine environment

According to a report by the International Crisis Group, annual fishing bans, and arrests of fishermen could be an evident proxy for sovereignty claims since they can be considered as legitimate efforts

to enforce resources protection. Also, from a more accurate analysis, restricting the Access of communities to fisheries might generate a political disturbance in the South China Sea, particularly in places that heavily depend on fisheries for food and jobs. This report emphasizes that the restrictions on natural resources are the most relevant factors that trigger the conflicts between China and neighbor countries (Ibídem).

A. Chinese attitudes towards china marine environment problem

1. Official attitudes

(1) Governments' attitudes

First of all, the Chinese government has never recognized that there are projects for constructing "artificial islands." The official posture from the State Council of the People's Republic of China and the Ministry of Foreign Affairs is the one expressed in the reports of "Construction on the Islands and Reefs" or "Land Reclamation Projects". From all the database of Regular Press Conferences, Spokesperson's Remarks, Speeches, Communiqués and Policies released by the Chinese government, when the words "Artificial

Island" is researched, there is no source of information that contains such expression. (The Website of the State Council of the People's Republic of China The Website of the Ministry of Foreign Affairs of the People's Affairs of the People's Republic of China,) It is important to state that the Chinese government has never admitted the Construction of Artificial Islands or the harm to the marine environment.

Regarding the Chinese official attitude towards the Construction on the Islands and Reefs in the South China Sea, the government has maintained its claim that the development does not harm the marine environment.

In January 2015, during the Defense Ministry's Regular Press Conference, the spokesman of the Ministry of National Defense ("MND") answered reporters' questions regarding the purpose of constructing and developing the Nanji Islands. The officer mentioned that "The construction is based on the legitimate right of China to perform activities within Chinese territory, and there is no necessity to over-interpret such construction". (Ibídem)

In April 2015, the Foreign Ministry Spokesman Hong Lei was asked to provide China's position towards the claim brought by the Bureau of Fisheries and Aquatic Resources of the Philippines in connection with China's construction projects on the islands and reefs of Nasha.

Particularly, to address the issue that China had caused damages to the local coral reef and affected the livelihood of the Philippine

fishermen. Hong Lei stated that China exercised indisputable **sovereignty** over the Nasha Islands and the adjacent waters. Therefore, China was authorized to carry out infrastructure projects on its islands and reefs. Moreover, Mr. Lei asserted that the Government conducted those projects paying particular attention to the protection of the ecological environment. One thing worth pointing out is that the Chinese Government has always stated that the construction projects have been developed based on information that has been gathered over **years of scientific assessments** and **rigorous tests** and is subject to **strict standards and requirements** of environmental protection. Besides, the Government claims that such projects will not damage the ecological environment of the South China Sea. China's perspective regarding the Philippines' claims on damages to the islands and reefs is that the latter is utterly unjustifiable. (Yujun, 2015)

On April 9, 2015, during the Regular Press Conference held by the Foreign Ministry Spokesperson Hua Chunying's the Chinese government addressed for the first time the situation of China's maintenance and construction work on some of the garrisoned Nansha islands and reefs. China claimed that the primary purposes of such work were: to optimize the islands and reefs' functions; improve the living and working conditions of personnel stationed there; safeguard China's territorial sovereignty and maritime rights and interests; increase the performance China's international responsibilities and

obligations in naval research, disaster prevention and mitigation, meteorological observation, environmental protection, navigation safety, fishery production service and other areas.

The Chinese Government has declared that the construction mentioned above Project is reasonable, justified and lawful within China's sovereignty, because it does not impact any country, and is beyond reproach. The Spokesperson reemphasized that the construction projects have gone through scientific assessments and rigorous tests and that China has put equal emphasis on the development and in the protection of the ecosystem by following a high standard of environmental protection and taking into consideration the preservation of the biodiversity and fishing resources. Therefore, the ecological environment of the South China Sea will not be damaged.

Also, China has committed to take further steps in future projects to monitor and protect the ecological environment of relevant waters, islands and reefs. The Chinese Government has emphasized that some negative and erroneous remarks have been made by some countries, regarding two points: first, China has followed the path of peaceful development and has upheld a defense policy that is defensive in nature. Peace and stability of the South China Sea serve China's interests of economic development and security. The Chinese government stays committed to solving disputes with countries through negotiations with ASEAN countries. Second, China has

noted that some countries, while keeping silent about the construction work by certain countries for a long time on the illegal occupied islands and reefs of China's Nansha Islands, point the finger at China's normal activities on its territory. China regards this attitude as a double standard, which is unfair and not constructive. China hopes that all the relevant parties could honor their commitment not to taking sides on related disputes and do more to promote regional peace and stability. (Chunying, 2015)

According to a paper released on the official website of State Oceanic Administration People's Republic of China on June 18, 2015, the Chinese government clarified that the Island Reclamation Project in the South China Sea would not destroy the marine environment. Even though there were some adverse effects on the reefs, they were regional, temporary, controllable and recoverable. The paper contended that such projects were carried out under **the scientific analysis** of a group of experts consisted of academicians and experts from Civil Engineering, Marine Engineering, Marine Ecology, Environmental Protection, Geology and Hydrology areas. More specifically, the Chinese government insisted that they stuck to the principles of "Green Project and Reef Ecology", adhered to protecting environment and planning, designing and constructing projects simultaneously, so that China can achieve the sustainable development goal of Nansha Islands. Furthermore, China claimed that the "Natural Simulation" Technical Ideas were adopted

in a way of mimic ocean waves blowing and moving coral gravel and other biology debris deposited on the shallow reef flat continuously, resulted in a solid over-tide body. Thus, with the construction of some facilities and the assistance of natural forces including atmosphere, rain, sun, supplemented by artificial acceleration measures, the reclamation area will result in ecological effects of weakening, curing, weathering, and greening, gradually forming green reefs surroundings. Finally, the Chinese government argued that several ecological environment protection measures have been taken. Regarding t hose measures, China arranged the construction project on the areas where reefs were almost dead while they started to reclaim in the flat coral lagoon basin that was inappropriate for the growth of the reefs. Additionally, China applied new type of reclamation method, which formed a "dig-transit-fill" construction form, the impact on the reef ecological environment of which was announced to be the lightest. At the same time, China presented that the permanent retaining wave wall, skirt and side fill were built promptly using concrete to control the suspended solids diffusion. Lastly, the Chinese government claimed that such projects adopted measures such as control of scale, efficiency improvements and continuous operation, which meant that the construction period would only last for a few months in one year and thus successfully avoided the spawning period of many species. (Beina, 2014).

(2) Legislative perspective

The first part of the paper discusses the International Legal framework that China has to comply with respective to the protection and preservation of maritime resources, now this section will turn to the domestic legislative perspective.

The main laws that regulate the construction on islands and reefs in China are the following: the *Marine Environment Protection Law of the People's Republic of China* which was adopted on August 23, 1982 and revised on December 25, 1999; the *Regulations on the Administration of Preventing and Control of Pollution Damage to Marine Environment* enacted in accordance with the Marine Construction Projects valid from November 1, 2006; the *Law of the People's Republic of China on the Administration of the Use of Sea Areas* adopted on October 27, 2001; the *National Marine Economy Development Plan* enacted by the State Council on May 9, 2003; and *the Twelfth Five-Year Plan of National Marine Development* released by the State Oceanic Administration.

According to *Law of the People's Republic of China on the Administration of the Use of Sea Areas*, people should get permits for using the sea area and pay for the utility, to decrease the damages to the coastal areas. Besides, with respective to the management and

policy guidance of the maritime area, the State Oceanic Administration proposed that China should make use of the sea in a sustainable manner, conducting precise prior assessment and analysis to avoid unsustainable use and waste. Furthermore, the coastal provinces also issued their rules and regulations regarding sea area management.

All the rules mentioned above and regulations specify the requirement of approval from the different levels of government to make use of the marine resources. All the laws command to follow the procedures contained in the Assessment and Environment Impact Evaluation guidelines. All the coastal provinces are busy making, revising or conducting the related work to help change any "disorder, excessive and gratuitous" use of the natural resources and to enhance the local economy and social development, so that the marine environment can be preserved.

It is worth mentioning that the establishment of paid use of sea area in China does not only effectively safeguard the legitimate rights of maritime owners and users, but also plays a pivotal role in preserving and improving marine environment, protecting marine resources, controlling marine pollution and maintaining ecological balance. . (Shuquan, 2009)

In all, taking into consideration the Chinese legislative perspective, via laws and regulations, the Chinese government has adhered to "the

principles of sustainable development, strengthening standardized management, scientific conservation and utilization of marine biological resources, increasing sea water, planning and guidance for the development of marine renewable energy and offshore oil and gas resources and thus effectively to improve the underpinning functions of marine resources to promote marine economy and economic and social development of coastal areas."(Ibídem) Besides, the Chinese government has devoted a lot of energy to preserve the marine biology. As for biodiversity, by 2015, three new national marine nature reserves and 44 individual Marines protected areas were established. These actions promote the formation of marine protected networks. Furthermore, as for marine ecology restoration, China has constructed 25 marine living resource recovery zones, carried out 35 coastal wetland restoration projects, and increased 200 square kilometers of tidal wetlands (The Twelfth Five-Year Plan of National Marine Development, 2014).

(3) Official media

Based on the above analysis, it is evident that the speakers of the State Council or other governmental departments have emphasized the Chinese sovereignty over the disputed areas and used this argument as a legitimate basis for Chinese construction projects. Also, China has insisted on its compliance regarding the obligations

of respecting the environment and the continuous efforts to protect the biodiversity and the natural resources in coral reefs.

The official mainstream media, including but not limited to People's Daily and Xinhua Daily, have emitted reports on disputes regarding the preservation of the environment within he the South China Sea and all of them tend to repeat summaries or recite the position and announcements given by the governmental speakers. Without exceptions, all the public voices are consistent with the governmental position.

1. Attitudes from the civil society

This part of the paper is based on information available in Sina Weibo and Zhihu. Sina Weibo is a public website where people can express whatever they want to, with no restrictions on subjects, languages and attitudes, this site is characterized for not been under the surveillance of the government. A lot of Chinese people use it to post their ideas and share their lives with others. The latter is also a public website where people communicate with each other via questions and answers. Typically, people raise a question, and the other person will respond based on their knowledge, prior experience or personal attitudes.

The research used to obtain information in these sites was to type in words and read through the recent 1000 posts regarding that

were shown, to get a basic idea of what people are thinking about those topics.

a. Chinese civil society attitudes towards “artificial island”

We used the keyword “artificial island” in Weibo, and 962 results were shown on April 22, 2016. Unfortunately, after reviewing all these results, we just found that one-third of them were news posted by some official accounts, and all of them were similar to what we introduced in the previous section. The information available addressed basic data about the construction projects on the islands and reefs and some facts reporting the disputes between China and the neighbor countries. The other two-thirds of the posts were regarding some good news that mentioned the development of Chinese construction projects from unofficial news accounts. However, no meaningful pure private personal posts were found regarding China's development of islands and reefs.

On Zhihu, in the past three months, there were 40 questions raised relating to the construction of artificial island, and all of them addressed different issues. The hottest questions received 562 responses. After reviewing problems and answers, we found that:

- Regular citizens in China do not distinguish "the construction of artificial island" from "the construction of the islands and reefs".

- People are curious about whether other countries had developed similar construction and what is the function of those islands.
- People are wondering what is the government goal of such construction projects.
- Also, there are over 200 responses claiming that they think the construction is a symbol of national power and that China is getting stronger. Some people also consider that such man- made islands should not be entitled to sovereign rights over 12 nautical miles nor extend the Exclusive Economic Zone over 200 nautical miles, but they still think that such constructions must be used to extend Chinese national defense force.

b. Chinese civil society attitudes toward pollution of the marine environment

We used the keywords "Pollution Marine Environment" in Weibo and found 800 results. After excluding the irrelevant posts, we found one-third of them were posted by private accounts, and they appealed to the public to protect the marine environment, paying special attention to some oil spill incidents. Also, people gave comments regarding some provinces' regulations to control marine pollution.

On Zhihu, in the past three months, there were over one

thousand related questions and a few of them receive over 500 responses. People show concern about the marine environment pollution resulting from oil spills and the construction problem. The civil society worries about the threaten to biodiversity arising from overfishing. They are also curious about how other countries, especially European nations who have good marine environment policies, deal with the same problems.

It is evident that people in China are genuine concerned about the marine environment problem. The society does not entirely follow Government's announcements, and people are reluctant to believe all the news that is given by the media. Furthermore, the Chinese civil society is interested in taking actions to preserve the environment, and to demand better policies from the government to solve these problems.

(2) Academic attitudes

We conduct research on the China Academic Journal Electronic Publishing House ("CNKI"), where almost all the electronic version of academic journals, research papers, conference minutes and other academic works can be found.

a. Chinese scholars' attitudes towards "artificial islands"

When we typed the words "artificial island" in CNKI database, we found 1000 articles published in 2015 and 166 issued in 2016. Most of the available papers analyze the status of artificial islands from an International Law perspective, and some others try to justify China's legitimate rights over the South China Sea region, based on the analysis of sovereign rights. The scholars emphasized "the doctrine of discovery" and "factual occupation".

Undoubtedly, the researchers are following the position held by the Chinese government, and no one presents a clear or definite attitude of the nature and intentions of Chinese construction conducts.

b. Chinese scholars' attitudes towards the pollution of the marine environment

In CNKI database, when we typed the words "Marine Environment Pollution", we found 4030 paper published in 2015 and 570 issued in 2016.

The scholars analyzed the marine pollution from different perspectives; they also studied some local cases and came up with some suggestions from a comparative law perspective.

Most of the scholars believe that the enforcement of the marine environment protection body of law is not as good as expected. Although they recognize that some efficient protective systems have

been introduced, they acknowledge that there are still some gaps to be filled.

They emphasized that the International Society shall cooperate to solve the environ mental problems, and they ask for public participation, which means that they request more disclosure regarding pollution to inspire the involvement of the public so that the civil society coadjutant to protect and oversee the construction process.

In conclusion, the academic research emphasizes the urgency of protecting the marines environment, but also recognize that the protection given by the Government is adequate and relatively mature. The main controversial issues that have to be solved are those related to the enforcement of the rules and regulations and the enhancement of information disclosure.

Conclusions

Both Chinese government and Chinese people have deeply recognized that coral reefs are precious resources that require protection from both legislative and practical perspectives, and it remains up to the current Chinese Government to see that the international and national legislations are utilized for the maximum protection of the reefs.

All the aforementioned international conventions have been criticized for suggesting that the exploitation and extraction of the

resources are incompatible with the sustainable conservation. Nevertheless, they have been created to enforce a legal framework in which sustainability secure benefits for wildlife and the livelihoods and developmental interests of the States. International law can offer some advantages and opportunities to protect and preserve

the coral reef in the South China Sea. It can be aided by providing financial support, expertise, information exchange and soft enforcement and to be the basis of creating areas in which the coral reefs are sustainably used, but also to secure that the reefs will be available for future generations.

The use of international instruments can result in harmonic policies between the Chinese and the Philippines Governments, and eventually those actions can contribute to the conservation of the coral reef ecosystem in the South China Sea. One possibility of achieving this goal, is through the creation of a World Heritage Park in the South China Sea would be an ideal approach to help diminish the tensions in the region, and give the authority to an international institution, the World Heritage Committee, to create the rules that would apply in that area. Another possibility for trying to prevent the depletion of coral reefs in the South China Sea is the creation of Marine Protected Areas. Actually, UNCLOS provides a legal framework to develop further actions and initiatives that can lead to the protection of coral reefs, but the most important factor for these areas to succeed is the will of the coastal states in who's internal

water, territorial seas, and Exclusive Economic Zone the coral reef lies.

Without doubt, the decline of coral reefs in the South China Sea is not only attributable to the construction of artificial islands by China, the forces that have driven species towards being immediately or potentially threatened with extinction cover the full gamut of modern environmental problems such as habitat loss, pollution, climate change, and unsustainable exploitation.

China has already recognized the marine problems in the South China Sea, and the country has already established a set of rules, regulations and methods from the central to the different province' levels. Furthermore, China has already recognized the marine environment does play a major role in balancing the global climate and the marine resources are significant to the sustainable economy, environment, society and security both domestically and globally. The main issue here for China is how to enforce such rules effectively in practice and how to balance their interests with that of the neighbor countries well within the International Structur