

Research on Legal Issues of Environmental Protection of Antarctic Tourism

Kexin Liu

*College of Marine Culture and Law, Dalian Ocean University, Dalian, Liaoning, 116000, China
2394010392@qq.com*

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Abstract: Antarctica's unique natural landscape is created by its own inherent resource environment and climate characteristics. With the progress of science and technology, the improvement of people's material living standard and the optimisation of transportation means, Antarctic tourism is developing in full swing, and more and more travel enthusiasts are going to Antarctica to explore the mysterious natural scenery. While Antarctic tourism brings great benefits to the economic development of Antarctica, it faces serious environmental damage problems, and the rise of Antarctic tourism and its fragile ecological environment will inevitably produce many contradictions. Therefore, the protection of Antarctic ecological environment has become an important international issue. Analysing the Antarctic ecological environment problems caused by Antarctic tourism, sorting out the current legislative status of Antarctic tourism environmental protection, analysing the problems existing in the legal regulation of Antarctic tourism environmental protection, and actively improving the relevant legal regulation are of great practical significance for promoting the sustainable development of Antarctic tourism.

1. Introduction

Antarctica, the southernmost point of the Earth, is the general name for the area south of latitude 60 degrees south, including the Southern Ocean, its islands and the Antarctic continent. From the 1820s onwards, explorers from various countries discovered different areas of the Antarctic continent one after another, which provided the basis for the sovereignty claims of various Governments over Antarctica, thus plunging the issue of sovereignty over the Antarctic region into international disputes. The Antarctic Treaty froze the claims of all countries to ownership of the Antarctic territory and clearly stipulated that the Antarctic could only be used for peaceful research purposes. Although Antarctic tourism fulfils this purpose, the rapid development of Antarctic tourism has made environmental problems such as Antarctic marine pollution and destruction of plants and animals even more serious, which will cause irreparable damage to the Antarctic environment, and the issue of ecological environmental protection in the Antarctic region has received great attention from all countries. How to regulate and manage Antarctic tourism by legal or other mandatory means to maintain the ecology of the Antarctic region is a common problem faced by the world today. At present, the most significant feature of the legal regulation system of Antarctic tourism environmental protection at the level of international law is that it has realized the

close connection of soft law and hard law norms, forming a system based on the Antarctic Treaty and the Protocol to the Antarctic Treaty on Environmental Protection (hereinafter referred to as the Protocol). The comprehensive legal regulation system guided by the Antarctic Treaty Consultative Conference (hereinafter referred to as ATCM) and the International Association of Antarctic Tourism Organizations (hereinafter referred to as IAATO) reflects the organic combination of Antarctic tourism activity norms and Antarctic environmental protection. But at present, the system is not perfect, lack of operability in practice, implementation has little effect. It is far from enough to simply rely on the existing international legal regulations to restrict Antarctic tourism activities, we must gradually improve the relevant international legal regulations and restrict non-contracting parties in the form of international customs, in order to better promote the sustainable development of Antarctic tourism.

2. Relationship between Antarctic tourism and environmental protection

2.1. The Antarctic resource environment is the material basis for Antarctic tourism

Antarctic tourism is highly dependent on the Antarctic resource environment. Antarctica is relatively independent from other ecosystems due to its unique geographic location and climatic characteristics, and is not affected by human factors, maintaining the most pristine ecology and the most unique natural scenery, with potential tourism value.^[1]With the rapid development of the economy and the continuous progress of science and technology, human beings' demand for spiritual life is increasing, and the ability to develop and use the natural environment and natural resources is constantly being strengthened, and tourism is gradually becoming a favoured means of consumption for human beings. People prefer to stay away from the hustle and bustle of the city and enjoy the beauty of nature in rare and mysterious places. The unique and most primitive resource environment of Antarctica is becoming an important tourism resource, and the unique ecological conditions make Antarctica tourism a popular tourist destination. Driven by high profits, travel agencies in many countries have met the needs of Antarctic tourists, making the boom of Antarctic tourism continue to rise.^[2]

2.2. Antarctic tourism is counterproductive to Antarctic environmental protection

All tourism activities have some impact on the environment in which they take place, although the compatibility of different environments with pollution varies. The rapid development of Antarctic tourism in recent years has worsened the already fragile ecological environment of the Antarctic. For example, the pollution of the ocean by oil leakage from cruise ships, the trampling of Antarctic vegetation by tourists, the pollution of the environment by wastes, and the destruction of the Antarctic ecological environment by the establishment of a large number of infrastructures, etc.^[3]

2.2.1. Damage to the Antarctic environment by Antarctic tourism vehicles

So far, ships have absolutely dominated the means of transport for Antarctic tourism. As a large number of ships enter Antarctic waters, pollutants such as harmful gases, wastewater and solid wastes generated during their voyage will inevitably pose a threat to the marine ecological environment. As Antarctic tourism continues to develop, the pressure on ships travelling to Antarctica to carry passengers will continue to increase, and the Antarctic environment will be under tremendous pressure. In addition, due to the presence of a large number of ice floes and icebergs in Antarctic waters, the surrounding marine environment is complex and volatile, which

puts forward stricter requirements on the seaworthiness performance of ships. However, not all ships have the ability to withstand the ice, so collisions can easily occur, leading to oil spills, which in such a fragile Antarctic region can be a catastrophic marine accident for Antarctica, which does not have a strong enough self-purification capability. For example, the reefing of the Bahia Paraiso and the collision of the cruise ship Explorer with an iceberg both resulted in large spills of crude oil, causing significant damage to the local habitat and killing many animals and plants.^[4]

2.2.2. Damage to the Antarctic environment by Antarctic tourists

Specifically, Antarctic ecosystems are damaged by Antarctic tourists in a number of ways. Firstly, the extremely low temperature in Antarctica limits the ability of waste degradation, and the rubbish discarded by tourists causes the ecosystem to take a longer time to digest; secondly, tourists' visit interferes with the habitat and reproduction of native animals, and due to the influence of the weather, Antarctic tourism activities are generally concentrated in the polar summer, which is the reproduction season of some Antarctic animals, and the incessant tourists are likely to cause the animals to be fertilised and reduce the reproduction capacity of animals.^[5] For example, in the case of Adélie penguins, the hatching rate of penguins decreases due to close human visits, and the number of Adélie penguins decreases drastically in just a few years; thirdly, the rise of Antarctic tourism brings tourists from all over the world to Antarctica, and all kinds of means of transport are frequently travelling to and from Antarctica, so that cross-regional population flows gradually break the borders between Antarctica and other regions, which inevitably brings about a change in the boundary between Antarctica and other regions of the world. In the process, this will inevitably be accompanied by the movement of species between the Antarctic and other parts of the world and within the different Antarctic regions, thus largely increasing the risk of invasion of foreign organisms and viruses into the Antarctic. Antarctic ecosystems are very fragile due to their short biological chains and the interconnectedness of species. As a result, the impact of invasive alien species on the Antarctic region is greater than one would expect.

2.2.3. Damage to the Antarctic environment from Antarctic infrastructure development

As Antarctic tourism has become increasingly active, Antarctic infrastructure has also developed significantly. The boom in Antarctic tourism has led to economic benefits for tourism enterprises. Driven by high profits, tourism enterprises have built permanent or semi-permanent facilities, such as tourism camps, airports, container hotels and so on, in addition to the construction of some small auxiliary facilities. On the one hand, the construction of Antarctic infrastructure will disturb the wild animals in the Antarctic region; on the other hand, large-scale construction of infrastructure projects will take up a large amount of land area in the Antarctic region, resulting in the destruction of vegetation, and the survival environment of Antarctic wild animals and plants will also be affected.

Although Antarctic tourism and environmental protection are a pair of contradictions, they are not irreconcilable. By following the principles of sustainable development and precautionary approach without exceeding the environmental capacity of the Antarctic region, it is possible to achieve a dynamic balance between Antarctic tourism and environmental protection, and minimise the adverse impact of Antarctic tourism on the Antarctic environment.

3. Current international legal regulation of environmental protection in Antarctic tourism

3.1. Antarctic Treaty

The Antarctic Treaty, an international treaty adopted and opened for signature, ratification and

accession by all States on 1 December 1959 and which entered into force on 23 June 1961, is the core of the entire Antarctic Treaty system.^[6]The Antarctic Treaty was signed against the background of the Cold War between the United States and the Soviet Union, and since all countries were competing for sovereignty over the Antarctic region at that time and since Antarctic tourism had not yet risen at that time, the issue of the environment of Antarctic tourism did not receive international attention. The Treaty aims to promote the freedom of scientific research in Antarctica and international cooperation in the field of science, and has not made clear provisions on the environmental impact caused by Antarctic tourism, and there are only some fragmentary provisions that can be used as reference, but they also provide the basis and reference for the future legislation. For example, article 7 of the Antarctic Treaty stipulates the obligation of prior notification of the parties, that is, the parties are obliged to inform the other parties in advance of the activities of their nationals, vessels or all other expeditions to Antarctica from their own countries. Under article 10 of the Antarctic Treaty, each party undertakes to make appropriate efforts, in accordance with the Charter of the United Nations, to ensure that no person shall engage in activities in Antarctica that are inconsistent with the principles and purposes of the Treaty. This article is regarded as a catch-all clause, in which Antarctic tourists and Antarctic tourism activities are, of course, included in the category of any person and any activity. It follows that tourism activities in Antarctica must not be carried out at the expense of the Antarctic ecosystem and that it is the responsibility of the Contracting Parties to regulate them.

As mentioned above, the Antarctic Treaty, which was established for the purpose of maintaining peace and freedom of scientific research, lacks direct and explicit provisions on the protection of the environment in Antarctic tourism, and its provisions are too broad and lack operability in practice.

3.2. Protocol on Environmental Protection to the Antarctic Treaty and its annexes

With the increasing number of Antarctic tourism activities and the gradual recognition of the potential negative impacts that tourism activities may have on the Antarctic environment, the generality and ambiguity of the Antarctic Treaty on the protection of the Antarctic environment came to light in 1991, when a number of Antarctic Treaty Consultative Parties, including the United States of America, signed the Protocol in Spain. The Protocol contains comprehensive provisions on Antarctic environmental protection, defines the Antarctic region as a "natural reserve for peace and science", stipulates the principles that must be followed in all human activities in the Antarctic region, and prohibits any activities related to mineral resources in the Antarctic region other than scientific research. It also provides for six areas in the form of annexes, respectively, on environmental impact assessment, protection of Antarctic flora and fauna, waste disposal and management, prevention of marine pollution, protection of the area and assumption of responsibility, of which the first five annexes have already entered into force.

The Protocol is the first comprehensive legal document on Antarctic environmental protection, and its Article 3(2) clearly stipulates that activities in the Antarctic region shall not adversely affect the ecological environment of the Antarctic region. In Article 3, paragraph 4, the principle of "prior notification" is once again affirmed, and it is clearly stated that any act that violates this principle and leads to adverse consequences for the Antarctic ecological environment shall be immediately amended, suspended or even cancelled. Annexes I and VI to the Protocol contain more specific and explicit provisions on the protection of the Antarctic environment. Annex I provides for a system of environmental impact assessment prior to Antarctic tourism, the results of which are the most direct basis for determining whether or not activities can be carried out in Antarctica. Annex VI contains detailed provisions on the liability of any person or organisation that causes environmental pollution after engaging in Antarctic activities. This annex stipulates that if the perpetrator or organiser of an

act causes an adverse effect on the Antarctic environment, such perpetrator or organiser shall take active remedial measures to repair the damage to the environment or pay the corresponding costs.^[7] Annex VI makes up for the gap in the assumption of responsibility under the framework of Antarctic environmental protection, and due to the existence of a certain punitive nature of this content, it can, to a certain extent, play a role in promoting the management of Antarctic tourism, but unfortunately this annex has not yet entered into force.

3.3. Provisions related to documentation for the Antarctic Treaty Consultative Meetings

The Antarctic Treaty Consultative Meeting (ATCM) is the decision-making body for Antarctic governance, and is the most important intergovernmental multilateral mechanism for international Antarctic governance, which is mainly responsible for the development of various Antarctic-related regimes.^[8] In recent years, with the development of the Antarctic tourism industry, the topic of ATCM has gradually shifted to Antarctic tourism activities. In 1994, the 18th International Committee on Antarctic Tourism (ICAT) set up an Antarctic Tourism Working Group (ATWG), which was devoted to the study of issues related to Antarctic tourism, and successfully adopted the first document dedicated to Antarctic tourism, the Recommendation XVIII-1". The document provides separate regulations for Antarctic activities from the perspective of tourists, organisers and operators in the form of a Tourism Guide.^[9]

3.4. Antarctic tourism industry standards developed by the International Association of Antarctic Tourism Organisations (IAATO)

IAATO is a non-profit, international, non-governmental organisation created in 1991 to advocate and promote safe and environmentally responsible Antarctic tourism in the private sector. In order to ensure the safety of the Antarctic region and the environmental protection of private travel, IAATO has developed a comprehensive set of procedures and guidelines that set strict limits on the number of people who may land in Antarctica, the number of passengers that may be carried on board a docking cruise ship, and the staff-to-traveller ratio. The aim is to safeguard the fragile ecological environment of the Antarctic region and to prevent the survival of Antarctic flora and fauna from being threatened by large-scale population movements. Although IAATO has issued a number of normative regulations for the Antarctic tourism industry, due to its own inherent limitations, many countries or regions that are not members of IAATO will not fully comply with the rules set by IAATO in order to maximise their own interests. IAATO, as a non-profit international organisation, is not in a position to take any coercive measures to deal with this phenomenon. Nevertheless, IAATO still restricts the qualification of tour operators to achieve the purpose of restricting Antarctic tourism activities and protecting the Antarctic environment. This shows that IAATO still needs to improve.

4. Problems with the existing international legal regulation of environmental protection in Antarctic tourism

4.1. Lack of specific criteria for environmental impact assessment systems

Although Annex I to the Protocol provides for a system of environmental impact assessment, there is currently no specific and clear standard for environmental impact assessment, and relatively vague concepts such as minor or transient impacts are used, with obvious shortcomings. Annex I requires each Party to conduct an assessment in accordance with its national environmental impact assessment procedures prior to undertaking activities in the Antarctic region, and if the result is a

"minor or transient effect", the activity may proceed, otherwise a preliminary impact assessment is required. If the results of the preliminary assessment indicate that the activity is only likely to have less than "minor or transient impacts", the activity may proceed; conversely, if the EIA report indicates that the activity may have more than "minor or transient impacts" in the Antarctic, a full impact assessment will be required.^[10]It can be seen that "minor or transient impact" is the core concept of the whole EIA system, and the definition of "minor or transient impact" is the key to the whole EIA process. In fact, the ATCM attempted to define the concept before the Protocol was enacted, but no consensus had been reached on the concept until the Protocol entered into force, which led to the fact that each State Party defined this criterion on its own, and it was up to each State to judge the degree of impact of its activities on the environment, which in fact enlarged the discretionary power of each State. It is very likely that the Parties will take advantage of the ambiguity of "minor or transient impacts" for their own benefit, and lower the standard of "minor or transient impacts" through their domestic laws, thus circumventing the full impact assessment and international monitoring.^[11]In the period 2003-2004, the Parties submitted 300 preliminary EIA reports, while there were less than 10 full EIA reports, and all full EIA reports were about national scientific research projects, there was no full EIA for non-government projects, including tourism activities, and some projects that were widely recognised as deserving of a full EIA were not carried out, and the environmental impact. The environmental impact assessment system has not had the positive effect on the development of Antarctic tourism that it should have had.

4.2. Limitations in the scope of application of existing international legal regulation and its lack of legal enforceability

Externally, the relevant regulations under the framework of the Antarctic Treaty system are binding only on States parties and not on non-parties. As can be seen from article X of the Antarctic Treaty, the Antarctic Treaty system only requires non-parties to follow the general principles and purposes, but does not make specific requirements and provisions for non-parties. According to the principle of relativity of effects of treaties, the Antarctic Treaty is binding only on States parties and has no legal effect on third States, for which it cannot create additional powers or obligations except with their consent. Therefore, the provisions and obligations imposed on the Contracting Parties under the Antarctic Treaty system for the purpose of protecting the Antarctic environment are not legally binding on non-Contracting Parties.^[12]In order to avoid being bound by the Antarctic Treaty System, some sovereign states choose to give up joining the Antarctic Treaty System so as to maximise their own interests in the Antarctic region, which makes the effect of the Antarctic Treaty System on the management of the Antarctic tourism environment greatly reduced.

From the internal point of view, the relevant legal provisions under the framework of the Antarctic Treaty system and the industry standards developed by IAATO are lack of enforcement. The relevant legal documents on Antarctic tourism environment adopted by ATCM are fragmented and lack of system, most of them are in the form of "recommendations", while the documents adopted by ATCM meetings are in the form of measures, decisions and resolutions. Therefore, the nature of "recommendations" has a great dispute in the international community, and some countries believe that it only has the role of advice. It is not legally binding, making it impossible to effectively implement some measures. In addition, although the regulations formulated by IAATO are more specific and detailed, as an international non-governmental organization, it plays a more significant guiding role and is not legally binding.^[13]

4.3. Lack of legal norms specific to tourism activities in the Antarctic Treaty system

The Antarctic Treaty system is a comprehensive, regional legal system that is specific to the

Antarctic region and is regarded as the basic law of the Antarctic region. The Antarctic Treaty, which is the basis of the Antarctic Treaty System, is the first legally binding document in the Antarctic region and is known as the "Antarctic Constitution". However, throughout the entire Treaty, the word "travel" is not included. The reason for this is that when the Antarctic Treaty was signed, Antarctic tourism had not yet been developed, and the negative impact of Antarctic tourism on the Antarctic environment had not yet been revealed. At the time of the signing of the Antarctic Treaty, most of the parties were arguing for the division of sovereignty and the division of resources, and the regulation of Antarctic tourism was not given sufficient attention by the participants. Similarly, when the Protocol was being formulated, participants emphasised the protection of the Antarctic environment only at the level of principles, and none of the six annexes dealt with Antarctic tourism activities. With the rapid development of the economy and the continuous development of Antarctic tourism resources, the Antarctic tourism industry has flourished, exposing a series of problems caused by Antarctic tourism, and the regulatory documents on Antarctic tourism are slightly insufficient in terms of both quality and quantity, which has seriously hindered the further development of Antarctic tourism.

5. Specific paths to improve existing international legal regulation within the framework of international law

5.1. Establishment of harmonised standards for environmental impact assessment systems

Annex I to the Protocol contains specific provisions for an environmental impact assessment system. The level of environmental impact of tourism activities is judged on the basis of "minor or transient impacts", above or below which an environmental assessment will be carried out according to different procedures. The definition of this criterion is therefore decisive for the successful implementation of Antarctic activities. However, the Protocol does not provide a uniform and clear definition of ambiguous terms such as "less than", "greater than", "minor" and "transient". On the contrary, it reserves the right of interpretation for the Contracting Parties, which in fact gives the Contracting Parties considerable freedom of interpretation, which will directly lead to the discrepancy in defining the criteria for judgement by the Contracting Parties, and the possibility of divergence in application. States parties are likely to take advantage of the ambiguity of the criteria to carry out tourism activities and avoid international scrutiny. Therefore, it is extremely important for the environmental protection of Antarctic tourism to define a standard that can be accepted by all parties. Leaving the interpretation to the Contracting Parties would result in the assessment criteria remaining inconsistent, and the right of interpretation should be withdrawn from the Contracting Parties and interpreted by the ATCM in a uniform manner.

5.2. Progressive establishment of the customary international status of the Antarctic Treaty System rules on environmental protection

According to the ancient customary international law principle that "treaties do not bind third countries", international treaties related to Antarctic tourism environmental protection are not binding on non-signatories. Based on the "freezing of sovereignty" in Antarctica, the domestic law of one country regulating the environmental protection of Antarctic tourism cannot restrict the behavior of another country according to the principle of territorial jurisdiction of domestic law, so that the behavior of non-contracting countries and their citizens is often unrestricted. How to effectively regulate the behavior of non-contracting operators and tourists is an urgent problem to be solved. International customs are universally binding for both contracting States and non-contracting States. The way to regulate the behavior of operators and tourists of

non-contracting States and their nationalities should be to actively implement the legal norms on environmental protection of Antarctic tourism, so that they can be recognized and practiced by more countries, especially non-contracting States, and thus be transformed into international customs. Thus, any country and any person engaged in tourism activities in the Antarctic field can consciously protect the environment. As one of the sources of international law, international custom is defined as "accepted as law as proof of general rules". By definition, it can be seen that international custom consists of two elements, namely "general rules" and "legal conviction". Therefore, to determine the nature of the international customs of environmental protection rules for Antarctic tourism, it is necessary to start from two aspects: first, some common practices of environmental protection for Antarctic tourism have been "repeatedly" and "consistently" implemented by various countries for a considerable period of time; Secondly, States consider the existence of certain practices of environmental protection for Antarctic tourism necessary and are willing to be bound by them. In the practice of environmental protection in Antarctic tourism, there are two types of rules that are likely to be established as international customs of environmental protection in Antarctic tourism: First, some rules established by multilateral treaties such as the Antarctic Treaty and the Protocol to the Antarctic Treaty on Environmental Protection have been highly valued by non-contracting parties because of their involvement in the Antarctic environment and ecology, and have been repeatedly practiced over a long period of time, and are being considered by more and more non-contracting parties as rules that should or must be followed, so it is likely to be transformed into international habits. The second is the industry self-regulatory norms established by IAATO. With the efforts of IAATO and its members, strict compliance by Antarctic tourists, wide acceptance by governments and strong support from international organizations, IAATO is more likely to become an international habit.^[14]

5.3. New tourism annex to the Protocol on Environmental Protection to the Antarctic Treaty

In recent years, the Antarctic tourism industry has been booming, the number of Antarctic tourists has increased dramatically, and Antarctic tourism has become one of the largest activities in the Antarctic region, which is most in need of international legal norms to regulate it, but the Antarctic Treaty system for the Antarctic region lacks legal norms for tourism activities. The addition of an annex to the Protocol is the least difficult, most operational and most effective measure to make up for the lack of legislation. The Protocol has made comprehensive provisions on the protection of the Antarctic environment, focusing more on Antarctic scientific research and relatively little on Antarctic tourism. The addition of a new annex to the Protocol specifically targeting Antarctic tourism activities can better integrate the management of Antarctic tourism with the environmental protection issues in the Protocol, in order to deal with the environmental damage caused by Antarctic tourism.^[15]As the international community pays more and more attention to the environmental protection issues arising from Antarctic tourism, the addition of a tourism annex under the Antarctic Treaty System can better reflect the basic principle of Antarctic tourism-environmental protection. On the other hand, the addition of a new tourism annex can link the annex to the focus areas of several other annexes, protect the Antarctic environment in a comprehensive manner, and ensure that Antarctica is managed in a holistic manner.

6. Conclusion

In recent years, major travel agencies have set off a boom in Antarctic tourism. The rise of the Antarctic tourism industry is bound to bring negative benefits to the Antarctic environment. Unregulated Antarctic tourism will inevitably conflict with the Antarctic environment, endanger the Antarctic ecological environment and even the common interests of all mankind. At present, the

existing international legal regulations led by the Antarctic Treaty and the Protocol are not perfect, and there are still many difficulties in dealing with the problems of Antarctic tourism environmental protection. On the whole, the relevant laws and regulations are not systematic, scattered, and lack of specialized laws and regulations; From the institutional level, the concept of relevant institutional provisions is vague, the lack of uniform standards, and the discretion of the contracting parties is wantonly expanded, which cannot meet the needs of the development of Antarctic tourism. In fact, the environmental damage caused by Antarctic tourism is not limited to the Antarctic region, but is global. Therefore, in the context of global governance, it is urgent to form a sound Antarctic tourism environmental protection mechanism, maintain the harmony and stability of the Antarctic region, balance the relationship between Antarctic tourism and Antarctic environmental protection, and achieve sustainable development of Antarctic tourism.

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