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## The Madrid Protocol 1991 and its Environmental Impacts towards the Quality of Life

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### Abstract

In 1991, the Madrid Protocol on environmental protection in Antarctica was added to the Antarctic Treaty. Antarctica has a central role in determining the Earth's climate and oceanic circulation patterns. The environmental principles in the Protocol include requirements for prior assessment for all activities. The environmental impacts of all activities is necessary to assess predicted impacts towards the quality of life in Antarctica and elsewhere. Antarctica faces a number of challenges, which have significant environmental implications. This paper explores the conceptual relationship between the quality of life and the Protocol and the wider implication of the concept.

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### 1. Introduction

The Antarctic continent in the South Pole has a very large area with permanent ice and snow. This continent is almost 98% ice and only 2% is ice-free land for its flora and fauna to flourish. The Handbook on Antarctica by the Australian Antarctica Division mentioned that the discovery and exploration of this continent was shaped by the continent's remoteness and its extraordinarily inhospitable environment. Due

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to its remoteness, for centuries humans keep away from it. Earlier, activities are gathered around the subantarctic islands and parts of the Southern Ocean on whaling and sealing. In historic terms, the land exploration of this continent is quite recent, most of it being accomplished during the twentieth century.

The continent is now a host to many scientific stations from several countries. Activities here involved detailed surveying and research. Gradual improvement in scientific technology and knowledge for the past 100 years have boost up scientific activities. Permanent stations were being established in the mid century. Planning was underway for the International Geophysical Year (IGY) in 1957-58, the first substantial multi-nation research program in Antarctica. Territorial positions had also been asserted, but not agreed, creating a tension that threatened future scientific cooperation. (AAD, 2011)

Thus, IGY was recognised as pivotal to the scientific understanding of Antarctica. At the beginning, twelve nations (Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, United Kingdom, United States and USSR) actively involved in Antarctica. Among them, nine made territorial claims or reserved the right to do so, agreed that their political and legal differences should not interfere with the research program. The success of the IGY have made these nations agree that peaceful scientific cooperation in the Antarctic should continue indefinitely. The Antarctic Treaty, commenced immediately after the IGY. The Antarctic Treaty was signed in Washington on 1 December 1959 by the twelve nations. In its fourteen articles the Treaty mentioned some important points.

The Treaty stipulates that Antarctica should be used only for peaceful purposes. This means that no military activities, whatsoever should take place. The Treaty also includes the freedom to conduct scientific research and international scientific cooperation. Results of these research should be freely available for the interested party.

Apart from setting aside sovereignty disputes between parties, the Treaty included rules relating to jurisdiction. Advance notice is also necessary before embarking on any expedition. In order to protect the environment of Antarctica, it is prohibited to dispose of any radioactive waste and nuclear explosions.

The Antarctic Treaty came into force on 23 June 1961, provides that any member of the United Nations can accede to it. The Treaty has 47 signatories until 2010 and membership is growing. There are 28 Consultative Parties. These parties are the original signatories or parties conducting substantial research in Antarctic. The Treaty has been recognised as one of the most successful international agreements due to the firm commitment of the Treaty parties.

The first Antarctic Treaty Consultative Meeting (ATCM) was held in 1961. Meetings are now frequent. They also have annual meetings. Discussions are diverse such as scientific cooperation, measures to protect the environment, and operational issues. Decisions during these meetings are by consensus. This process has allowed the Treaty to evolve into a system with components that meet the special needs of managing activities in the Antarctic, while protecting national interests. This particular regime is now known as the Antarctic Treaty System(ATS). It operates under the umbrella of the annual ATCM. (AAD, 2011)

## **2. The Antarctic Treaty System**

The ATS is the Antarctic Treaty plus a number of related agreements. The ATS includes the recommendations, measures, decisions and resolutions of the Consultative Meetings relating to matters on scientific cooperation, management of tourism, protection of the Antarctic environment, communication and safety. The development of these agreements allowed, with greater precision the implementation of legally binding provisions for the regulation of activities in Antarctica. (AAD, 2011)

## **3. Considerations for sustainable measures in the ATS to minimize environmental impact.**

The ATS was created with the intention of protecting and conserving the environment, among others. The interested parties come up with agreements and conventions to highlight sustainable measures for activities in and around the Antarctic.

In 1964, the Agreed Measures were adopted to protect endemic and native flora and fauna. Its provisions require for permits for activities that involve taking or handling birds and seals. It include rules to prevent the uncontrolled introduction of non-indigenous organisms. Measures are provided for areas of outstanding ecological interest to be set aside as a Specially Protected Area. Later, Sites of Special Scientific Interest were added to protect significant scientific values.

The Seals Convention was developed for regulating activities involving commercial sealing, should such an industry ever be resumed. Southern elephant seals and Antarctic fur seals had been reduced to near extinction in the 19th Century. Although there is no indication of any interest in sealing, the Convention provides for a precaution for such activities to be undertaken sustainably. Some species of seals are totally protected, and catch limits are set for others.

Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) was adopted in 1980 to regulate fishing for krill. It is one of the key species in the Antarctic marine food web. It is created for the conservation of whales, seals, penguins and other species that directly or indirectly depend on krill for food. The Convention adopts an 'ecosystem approach' where it provides for krill and all the other living resources of the Southern Ocean as part of an integrated system. This is where the impact on predator, prey and related species are considered and decisions on sustainable harvesting levels are made base on sound scientific advice. Conservation Measures under the CCAMLR is to establish protected species, set catch limits, identify fishing regions, regulate when fishing may occur and what fishing methods can be use and establish fisheries inspection procedures.

### *3.1. The Madrid Protocol*

Antarctica has a central role in determining the Earth's climate and oceanic circulation patterns. Its vast amount of ice (which holds 90% of the planet's freshwater) ensures that the Earth does not 'over-heat', as well as determines the currents of all the major oceans. There should be little doubt that the Antarctic is an extremely important place, not only in political, geographical and environmental terms, but also in the wider consciousness of the international community.

Antarctica faces a number of challenges, many of which have significant environmental implications. It is increasingly affected by human activity, not only in terms of activities that take place within the Antarctic region, but also because of activities occurring elsewhere that may have transboundary or global implications. Threats to the Antarctic environment are either due to activities from within the Antarctic region, or due to the consequence of activities in other areas of the world, especially developed States. It was primarily because of increasing concerns about the threats to the Antarctic environment that the 1991 Madrid Protocol on Environmental Protection was concluded. The Protocol entered into force in January 1998 following ratification by Japan. (Protocol, 1991)

In 1991, the Madrid Protocol on environmental protection in Antarctica was added to the Antarctic Treaty. The Madrid Protocol was adopted in response to proposals that the wide range of provisions relating to protection of the Antarctic environment should be in a legally binding form. The scope of the environmental protocol is limited to the mainland and the spurs of the continental shelf projecting out to sea surrounding the Antarctic. In the Protocol, Antarctica is designated as a natural reserve devoted to peace and science and any activities involving mineral resources are prohibited, except for scientific research purposes. There is also a provision for the establishment of a Committee for Environmental Protection (CEP) intended to provide advice and issue recommendations to the parties regarding implementation of the Protocol. (KoB, 2010) There are six annexes in the Protocol. There is protection

for the environment by doing an environmental impact assessment prior to activities in the Antarctic. The annexes also concern the conservation of Antarctic Fauna and flora, waste disposal and waste management and prevention of marine pollution. Management of protected areas and liability for environmental emergencies are included.

#### **4. The Quality of Life concept**

The term quality of life (QOL) is used to evaluate the general well-being of individuals and societies. The term is used in a wide range of contexts, including the fields of international development, healthcare and politics. 'Quality of life' should not be confused with the concept of 'standard of living', which is based primarily on income. Instead, standard indicators of the QOL include not only wealth and employment, but also the built environment, physical and mental health, education, recreation and leisure time, and social belonging. (Gregory, 2009)

According to the ecological economist Robert Costanza, QOL has long been an explicit or implicit policy goal. Although there is no definite definition or scientific meaning of QOL, in the making of a governmental or administrative policy QOL will indirectly be included. Diverse 'objective' and 'subjective' indicators across a range of disciplines and scales, and recent work on subjective well-being (SWB) surveys and the psychology of happiness have spurred renewed interest on the importance of the QOL concept. (Costanza, 2008)

QOL is an important concept in the field of international development, since it allows development to be analyzed on a measure broader than standard of living.

Organizations such as the World Bank, for example, declare a goal of 'working for a world free of poverty', with poverty defined as a lack of basic human needs, such as food, water, shelter, freedom, access to education, healthcare, or employment. (WB, 2009) In other words, poverty is defined as a low QOL. Using this definition, the World Bank works towards improving QOL with the stated goal of lowering poverty and helping people afford a better QOL.

#### **5. Environmental impact of activities in the Antarctic and global quality of life**

The environmental principles in the Madrid Protocol also include requirements for prior assessment of the environmental impacts of all activities and regular and effective monitoring to assess predicted impacts towards the QOL as an important concept in the field of international development (the development of greater QOL for humans), and it allows development to be analyzed on a measure broader than standard of living. Although the Madrid Protocol lay down the necessary principles for the conservation of the environment, is it enough to safeguard QOL? The impacts assessed is not an effective tool unless monitoring of the activities are also taken seriously.

Antarctica faces a number of challenges as noted above, many of which have significant environmental implications. The question now is whether the provisions of the Madrid Protocol can help the international community understand the wider implications of sustainable measures taken and its relation to the QOL concept. QOL at the global level will have to be assessed not only through the Madrid Protocol but also through other international and national laws. Environmental awareness must be an important agenda at the national level.

Antarctica is an important laboratory for research into the global impacts of the activities around the world. Transboundary movement of air and water pollutants due to economic and socio-economic activities such as deforestation and agro based industries, chemical and heavy industries have now taken its toll on the QOL. Environmental impact on the lakes on Signy Island in the Maritime Antarctic for instance have shown one of the fastest local response to regional climate found anywhere on Earth. The

average lake temperatures have increased by 0.9°C in 15 years while temperatures in the surrounding seas have stayed constant. (Ward, 2001)

Global change may have effects that impact directly on the Antarctic environment and its flora and fauna. Global warming may also contribute to the break-up of ice-shelves. This creates a loss of habitat for animals dependent on the ice-shelf. It also causes the rise of sea level on low-lying regions in the rest of the world. The international legal response for this issue is the adoption of the 1992 UN Framework Convention on Climate Change and its 1997 Kyoto Protocol.

Increasing Ultra Violet (UV) radiation due to the ozone hole may cause changes to phytoplankton communities and could have effects up the food chain. The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer is the international attempt to reduce the amount of ozone depleting chemicals in the stratosphere. (French, 1999)

Antarctica is a sensitive indicator of global change. The polar ice cap holds within it a record of past atmospheres that go back tens or even hundreds of thousands of years. This gives researchers an opportunity to study the earth's natural climate cycles against which the significance of recent changes can be judged.

The concerns for the environmental management of Antarctica are how to make good, past damage and how to reduce the current and future impacts to Antarctica also global QOL.

## **6. Bodies created for conserving Antarctica.**

Apart from the legal instruments and measures outlined above, a number of specialised bodies assist the Treaty parties in the conduct of their work. These bodies may be asked to do specific tasks. They could also be invited as observers and participate in any Treaty forums. Greater emphasis should be given to these specialised bodies to also create environmental awareness and global QOL.

## **7. Conclusion**

The Treaty provides that any party could call for a review conference after the expiration of 30 years. No party has ever done so.

After more than 50 years in existence, the ATS matures into one of the most successful sets of international agreements. The ATS is unique as it tries to protect an entire continent and hopefully will remain protected because of commitment and cooperation of the Treaty parties. The QOL should be in the agenda of all parties.

Similar to the rainforest, Antarctica also have a unique ecosystem that help support life on Earth. Specific attention should be given in preserving their integrity. Strict limitations on human activities in these areas should be adopted. International and national laws can play their roles to ensure that this is achieved. (French, 1999) Sustainable use of the Antarctic will assist in its survival and increase the global QOL.

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