

# Research Report

# MUNISH '12



Please think about the environment and do not print this research report unless absolutely necessary.



**Forum:** Environment Commission

**Issue:** The question of the human impact on Antarctica

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## Introduction

Antarctica is the coldest continent of all, with 98% of its whole surface being covered in ice. It is twice the size of Australia and can be considered a desert due to its drought. Humans can hardly be found on this continent, but there are quite a few researchers who stay in research centers on the continent to find out more about it.

Over the last few decades, the impact of humans on Antarctica has become an issue. Antarctica is suffering from human interference, even though it is still known for its immaculate environment. The researchers temporarily living on this continent are not the only humans who have impacted Antarctica. In fact, there are humans that affect this continent far worse than they do.

## Definition of Key Terms

### Ecosystem

According to the *Oxford Advanced Learner's Dictionary*, an ecosystem can be defined as: "all the plants and living creatures in a particular area considered in relation to their physical environment." It's a community full of living organisms (such as plants and animals) and abiotic components (such as air, water, light and mineral soil) that are interacting with each other to make the system work and to keep the balance. Ecosystems are controlled by both internal and external factors (such as the climate).

### Global Warming

Global warming is the rise of the temperature of the atmosphere and oceans on Earth. It is mainly being caused by greenhouse gases produced by different kind of human activities like deforestation or the burning of fossil fuels. Global warming can result in the rising of the sea levels and the expansion of subtropical deserts. It can severely affect certain ecosystems.

## Pollution

By disturbing the natural environment with chemical substances or energy (such as sound, light or heat), pollution will occur. The environment will suffer from this pollution, which can be expressed in the decrease of environmental health, such as global warming.

## Overfishing

Overfishing can occur when humans catch or kill too many of a certain species of fish, thus likely to endanger that species. Other than endangering a certain species, it can also upset the entire marine ecosystem, which has already happened a few times, like was the case with the overfishing of sharks. Certain ecosystems can recover from overfishing, but it has to have the right conditions to do so.

## Sealing

Sealing refers to the hunting of seals for personal or commercial reasons. Seal hunting is allowed in the following countries: Canada, Namibia, Greenland, Iceland, Norway and Russian Federation.

## Whaling

Whaling is the hunting of whales, mainly for its oil and fat. Commercial whaling is currently prohibited by the International Whaling Commission (IWC) to give the overhunted species time to recover, although some countries, such as Japan, wish to lift the ban because they claim that certain species have already recovered. Some countries and environmental groups, however, are in favor of banning whaling permanently.

## General Overview

### Background

Antarctica used to be the only continent that was free from human impact, until an American sealer set foot on the west coast in 1821. The continent had been spotted a few times already by a few humans, but they all returned without reaching this land of ice. After this exploration, many more began to follow, mostly to reconnoiter this new continent. The human activity was small, but after World War II, scientific research began to take shape on this continent.

### Territories

Antarctica knows no central government, but the continent is currently being split up in different territories, each controlled by a certain country. These countries recognize each other's territory, but these territories aren't recognized on global scale. The countries that claimed a territory are the following (in order of the size of their territory): Australia, Norway, United Kingdom, Chile, Argentina, New Zealand and France.

## Research

There are currently quite a few research stations of different countries present on Antarctica. Different kinds of research is being conducted, such as studies concerning (ocean) geography, physics, astronomy and biology. An important type of research, that is still in the workings, concerns the ozone layer in the atmosphere above Antarctica, which currently has the largest ozone hole in the world. Climate change is also something that is being studied on Antarctica, mainly because Antarctica probably has the fastest response to regional climate.

An interesting fact is that Antarctica is also the perfect place to do research about the world's geography from thousands of years ago. Because of its thick layer of ice, everything that was underneath it is still intact. Researchers are trying to drill under this layer to find out more about Antarctica's, and thus also the Earth's, past natural climate cycles, mainly to predict new developments that will happen in the future.

## Human Impact

The human impact on Antarctica is bigger than one would think. This impact can be split up into several categories.

### *Impact on the environment*

The human impact on the environment starts off with pollution. This pollution is often caused by transportation to Antarctica, mainly air and water pollution from ships. Chemical and sewage pollution from research stations are also affecting Antarctica's environment, mainly the result of waste dumping. Tourists are also responsible for chemical and noise pollution, as well as littering.

Another problem is global change, with global warming as the biggest issue. Due to global warming, ice-shelves may break, which would rise sea levels, not only in the surroundings of Antarctica, but also on low-lying areas elsewhere, likely causing many animals to lose their habitats on those ice-shelves. This is caused by the use of certain kinds of technology everywhere in the world.

### *Impact on animals*

Not only do humans affect the environment, but also animals are the victims of different kinds of human activities. Mostly, sealing, whaling, overfishing and catching animals because of their fur and fat...etc. are the cause of many animal deaths on Antarctica, but, like previously mentioned, Antarctica's ozone hole is the biggest one in the world, which definitely affects the food chain of its ecosystem because it kills phytoplankton, which serves as food for many of the organisms in its surroundings. Also, littering may cause problems for animals. For example, the dumping of oil

in the ocean is likely to intoxicate animals in surrounding waters, as well as spread to contaminate larger areas of water. These activities can lead to more species becoming endangered, such as many different kind of whales and petrels.

Another form of human impact on animals is the introduction of new species. These species carry the risk of spreading diseases of which the Antarctic wildlife isn't resistant to. They can also cause environmental problems, which is quite a major issue.

These two categories are also interconnected with each other. After all, the environment and its animals belong to one ecosystem, so human actions will not only affect separate parts of this ecosystem, but everything will suffer from it in the end.

## Major Parties Involved and Their Views

### Australia

Australia is the country closest to Antarctica. It also owns the biggest territory on the continent. It has signed the Antarctic Treaty. Australia has taken a leading role concerning the protection of the Antarctic environment and it is being recognized as an international leader in the Antarctic environmental management.

### Greenpeace International

Greenpeace International has established its own research station on Antarctica and arranges expeditions each year to record the environmental effects caused by humans. It also led a campaign to prevent mining on Antarctica when some countries wanted to regulate it.

### United States of America

The United States of America was the first country to be involved with Antarctica. It currently has no territory, but it reserved its right to make a claim in the Antarctic Treaty. It does have quite a lot of research stations located on the continent.

## Timeline of Events

An overview of important events can be seen below.

Date	Description of event
15 <sup>th</sup> century	People started to believe that there was another part of the world in the south, way

past the equator.

1819	First sights of Antarctica.
1821	The first human beings landed on Antarctica.
1956	The first base has been set up on Antarctica by the United States.
1 December 1959	The Antarctic Treaty was signed.
23 June 1961	The Antarctic Treaty came into force.
1978	The first human baby was born on Antarctica.

### UN involvement, Relevant Resolutions, Treaties and Events

The most important documentation is the Antarctic Treaty, signed on 1 December 1959 by 12 countries, although it is currently signed by 48 countries. The most important points of this treaty are that it prohibits any military activity on the continent, encourages collaboration in scientific research, and gives every nation the freedom to conduct their own research, whilst banning any nuclear activity or waste on the planet. Other important documentations can be found below:

- Antarctic Treaty, 1 December 1959
- Madrid Protocol, 1999
- Protocol on Environmental Protection to the Antarctic Treaty, 1991
- Question of Antarctica, 9 December 1992 (A/RES/47/57)
- Question of Antarctica, 29 November 1996 (A/RES/51/567)

### Evaluation of Previous Attempts to Resolve the Issue

The United Nations has submitted a few resolutions on the issue of Antarctica. These resolutions mostly support the Antarctic Treaty and the Madrid Protocol. The protection of the Antarctic environment, ensuring international peace and the freedom of scientific research are returning points on the agenda. Mining has been prohibited.

The Madrid Protocol required all the Treaty Parties to clean up abandoned stations and waste, as long as it doesn't impact the environment any more or if it would remove historic sites or monuments.

Some bases are currently trying to use alternative energy sources, although this is still in an experimenting stage and cannot be fully used yet.

Protected areas have been appointed with limitations to humans, often prohibiting the entering of vehicles or even entering at all.

## Possible Solutions

Member States have already made some agreements about solving the environmental issues on Antarctica, with the Antarctic Treaty as highlight. However, the Antarctic Treaty doesn't cover all the important aspects. Quite some things still need to be included.

To start off with, introduced species are quite a disturbance to Antarctica's wildlife. Be it animals that are introduced by humans or animals that came to Antarctica by themselves because of rising temperatures. Member states should pay attention to these species and must try to prevent them from spreading and putting the ecosystems in Antarctica at risk of imbalance. Animals that are currently living on the Antarctica are the victims of the rising temperature, a new temperature that the introduced species love. It's quite likely that some of these animals will become extinct if the temperature keeps rising.

Organisms living near Antarctica are more vulnerable to the change of the ocean, especially acidification, than other organisms. This can have consequences for animals that are part of its food chain. It's important that the ocean should be free from acidification. Can this be prevented?

Antarctica is rich of natural resources, so it's likely that companies and countries will be wanting to use these when they won't have sufficient resources of their own. The Antarctic Treaty does prohibit mining, but Antarctica's whole surface isn't being covered by the Treaty, which can have severe consequences in the near future.

Other than addressing things that aren't in the Antarctic Treaty, member states also need to think of better solutions to issues that are already present, such as the environmental issue: Member states are working on it, but not all of them are as willing to prevent environmental damage. Member states should think of alternate energy sources that are environmental friendly.

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## Appendix or Appendices

- I. [http://www.coolantarctica.com/Antarctica%20fact%20file/science/antarctic\\_treaty\\_summary.htm](http://www.coolantarctica.com/Antarctica%20fact%20file/science/antarctic_treaty_summary.htm)

A summary of the Antarctic Treaty and a list of all the countries that signed it.

- II. [http://www.coolantarctica.com/Antarctica%20fact%20file/science/antarctic\\_treaty.htm](http://www.coolantarctica.com/Antarctica%20fact%20file/science/antarctic_treaty.htm)

The full Antarctic Treaty.