

**Committee:** Environment Sub-commission 2

**Issue:** Addressing the challenges of mountainous biodiversity

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## INTRODUCTION

Climate change has been at the forefront of events. Science has been warning people of the catastrophic consequences at the earth's doorstep. Rainforests and ocean ecosystems have been protagonists in the fight for climate action. However, if we take a magnifying glass and look at the problem in depth, we would see how important mountainous biodiversity is to the bigger picture. Over the years, the media, governments and climate activists may not have been paying the attention deserved to mountain ecosystems, which is why it is so important for you to address the issue. Mountain ecosystems host a variety of both plant and animal species at both high and low altitudes, while at the same time being the main "supplier" of water and food sources for people living in mountain areas. Moreover, mountains exist in every continent of the world and are found in most, if not all, weather conditions, whether that is

polar ice caps or rain forests. Having said that, addressing mountainous biodiversity and the challenges it faces is something to be prioritised by



all countries, when referring to environmental issues.

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Mountains cover 27% of the world's surface and 22% of people living around mountain areas are supported by its natural gifts.<sup>2</sup> However, we fail to see all the benefits mountainous biodiversity has to offer, since our attempts to protect it have turned out to be unsuccessful. Modernisation of agricultural production, tourist infrastructures, climate change and air pollution are just some of the factors leading to environmental and growing degradation in mountain ecosystems. The afore-mentioned degradation affects two domains,

<sup>1</sup> "UNESCO's Commitment to Biodiversity." UNESCO, 15 Aug. 2019, <https://en.unesco.org/themes/biodiversity>.

<sup>2</sup> "Why is It Important?" *CBD Home*, 6 June 2007, [www.cbd.int/mountain/importance.shtml](http://www.cbd.int/mountain/importance.shtml).

which, although different, are both directly associated with biodiversity in mountain regions. Through tourism, which does not take into consideration the consequences of waste disposal in a natural environment and unsustainable cleansing can lead to the rise of soil, increasing the threat of avalanches. Flooding caused by rain and uncontrollable water force, contribute to a great change in ecosystems and unfortunately lead many animal and plant species to mass extinction from the area. Environmental degradation results in social and economic consequences. Societies living around mountains are characterised as the poorest and suffer



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from hunger. The lack of natural sources force people to move to more urban places, causing another issue, namely overpopulation. Mountain ecosystems host and nurture not only animal and plant species, but also societies, whose income depends on mountainous biodiversity. At a time, when climate change is threatening our planet's future, we can find hope in mountainous

ecosystems and that is why it is of the utmost importance to protect them and use their resources in a way that will not harm their life presence.

## DEFINITION OF KEY TERMS

### **Biodiversity**

Also known as biological diversity, biodiversity is the term used when referring to the variety of life in an area/ecosystem. That is not limited to just animals; however, it refers to a wider picture of all living organisms, such as plants. Mountainous biodiversity is especially of great importance because of the extraordinary amount of variety that is found in the mountains.

## Ecosystem

According to the Encyclopedia Britannica an ecosystem is: “the complex of living organisms, their physical environment, and all their interrelationships in a particular unit of space.”<sup>3</sup>

## Habitat/Environmental Degradation

According to the International Union for Conservation of Nature (IUCN), degradation is defined as a decline in species-specific habitat quality that leads to reduced survival and/or reproductive success in a population e.g. related to changes in food availability, cover or climate.

## Climate Change

Climate change is a long-term weather pattern a region can experience. Another term interchangeable with climate change is global warming<sup>4</sup>.



Picture depicting the results, climate change can have.

## Ecotourism

Ecotourism (Ecological Tourism) is a type of tourism which focuses on visiting undisturbed natural environments and it differs from traditional tourism. Ecotourists pay attention to not exploiting and harming the natural resources of the area they are visiting.

## Invasive Species

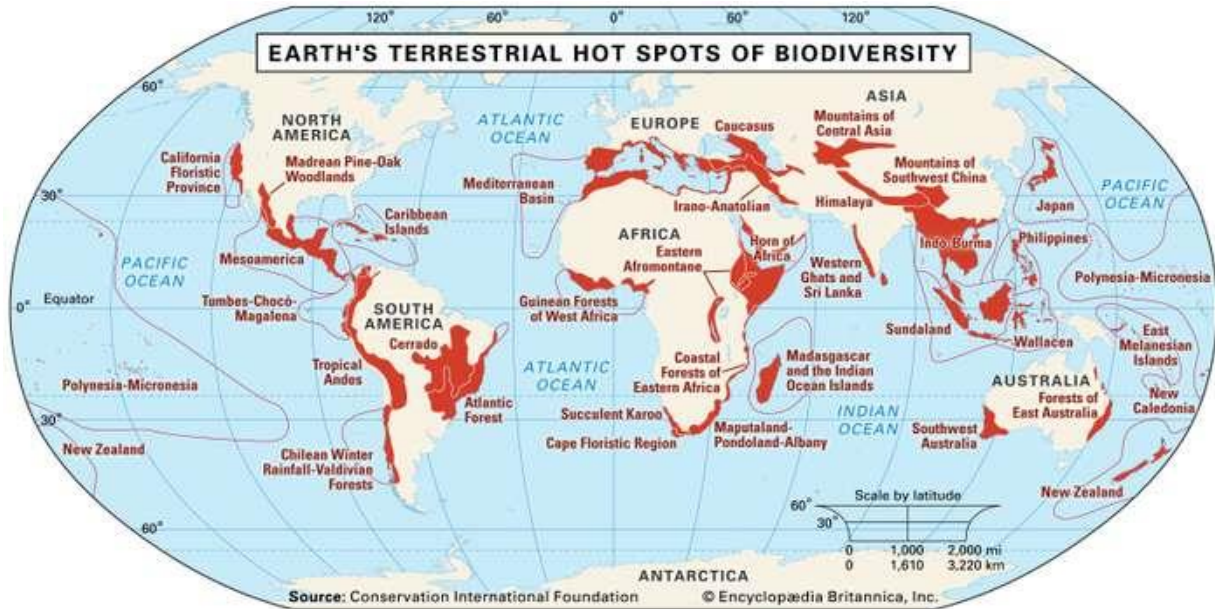
According to the United States Department of Commerce National Ocean Service, invasive species are organisms (animals, plants, microorganisms etc.) that find themselves in a foreign for them region, to which they do not belong. They can be introduced to said regions through many ways, but mostly by humans. Their presence in other regions can lead to the extinction of native plants and animals, problems concerning biodiversity, or its complete destruction, and drastic altercations in natural habitats.

<sup>3</sup> The Editors of Encyclopaedia Britannica. “Ecosystem.” Encyclopædia Britannica, Encyclopædia Britannica, Inc., 13 Feb. 2019, <https://www.britannica.com/science/ecosystem>.

<sup>4</sup> Jain, Manisha, et al. “What Is Climate Change?” Science ABC, 11 Oct. 2019, <https://www.scienceabc.com/social-science/climate-change-definition-causes-and-effects.html>.

## Ecotones

Ecosystems can be described as a patchwork of an area. Within these patches, some junction zones, namely ecotones, can be found. Ecotones are zones in ecosystems, which contain species that have adapted to the living conditions in their ecotone.



As identified by British environmental scientist Norman Myers and colleagues, the 25 regions, shown in the above map, contain unusually large numbers of plant and animal species, and have been subjected to unusually high levels of habitat destruction by human activity.<sup>5</sup>

<sup>5</sup> Picture and Information: Pimm, Stuart L. "Biodiversity." Encyclopædia Britannica, Encyclopædia Britannica, Inc., 9 July 2019, <https://www.britannica.com/science/biodiversity>.

## BACKGROUND INFORMATION

### The importance of Mountainous Biodiversity

Due to the extreme variety of altitudes, weather conditions and ecosystems, mountains are able to host a tremendously large number of species. A great variety of species, including animal and plant species and microorganisms, find themselves in rich ecosystems, benefiting from one another whilst assisting communities living around mountain areas. Moreover, the isolation from human population and contact at particular altitudes



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is of particular liking to many endemic and endangered species, which find refuge in those areas.

Agriculture and how mountainous biodiversity contribute to its involvement plays a major role in the reasons why its conservation is of vital importance. Many communities totally depend on agricultural production and most of the time are not disappointed. Mountain weather conditions have been judged appropriate for cultivation of many crops, such as tomatoes, apples, maize and potatoes. Moreover, mountain regions are the habitats for a large number of domesticated mammals such as alpaca sheep and llamas. These results of high biodiversity rates and the increase in genetic diversity of domesticated mountains animals and plants are also estimated to be associated with cultural diversity and variation in environmental conditions.

Mountains are to be found in 88% of the world's 821 terrestrial eco-regions.<sup>6</sup> Mountains and mountainous formations can also be found on the ocean floor and constitute a large portion of the mountainous surface globally.

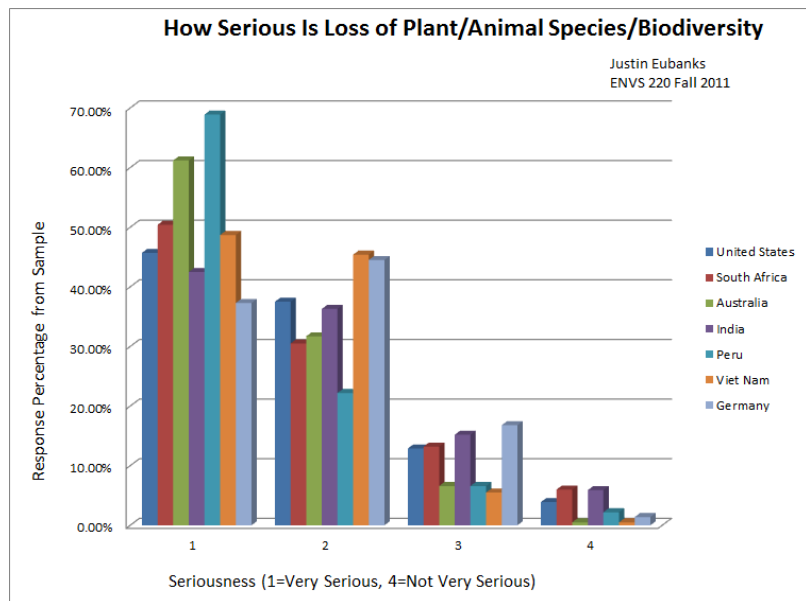
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<sup>6</sup> "Mountains." *IUCN*, 2 Nov. 2018, <https://www.iucn.org/commissions/world-commission-protected-areas/our-work/mountains>.

### Challenges Mountainous Biodiversity faces

As of the 21<sup>st</sup> century, humanity has been introduced to new climate challenges. These challenges have started to threaten biodiversity, which faces several serious growing challenges. Climate change and careless human activity have become a threat for mountains and their ecosystems. Habitat degradation causes many natural disasters to take place. This environmental degradation results in the extinction of many rare and non-species. Apart from the environmental consequences, societies that are dependent on mountainous biodiversity face an increase in poverty and hunger, because of the subsequent difficulty in cultivating crops in a damaged environment. Due to a worsening in living conditions, a large number of people are forced to move to more suburban areas, which leads to overpopulation in urban regions, another global issue caused by biodiversity loss and environmental degradation. Another factor causing environmental degradation is the extraction of minerals from mountain areas. Such extractions can have a severe impact on the variety of ecosystems and result in many issues, such as water pollution, which affect mountain dependent societies. A similar way mountains are used for to benefit mankind is to generate electricity through hydropower. While this method may seem like a new and renewable way of energy, it can be severely harmful to river and lake ecosystems of mountains. Altering water ecosystems and neighboring ecosystems, through the creation of artificial lakes, can cause catastrophic consequences.

As previously mentioned, high altitudes are of particular liking to many species. New species from foreign ecosystems are frequently introduced to mountain areas and can replace indigenous species. However, it is not always that catastrophic, since either the new species or the ecosystem itself can learn to adapt to the new conditions and change. Moving on to a factor that might be overlooked; tourism. Tourist activities taking place in mountain areas, such as skiing, and generally outdoor activities have seen a rapid increase recently. In order to satisfy the needs of



The above graph depicts how serious is the loss of biodiversity in particular nations.

active tourists, governments install many infrastructures that can be harmful to ecosystems and disturb the well-being of wild species. 7

In conclusion, agriculture, climate change, invasive species and the growing demands for tourism are just some of the things that can lead to enormous habitat degradation. It is crystal clear that an environmental issue does not limit itself to one sector when it comes to the consequences. It is a chain and, if one link breaks, then the chain collapses and with it everything that it held together. It is our duty and of governments to ensure that something like that does not happen.

## MAJOR COUNTRIES AND ORGANISATIONS INVOLVED

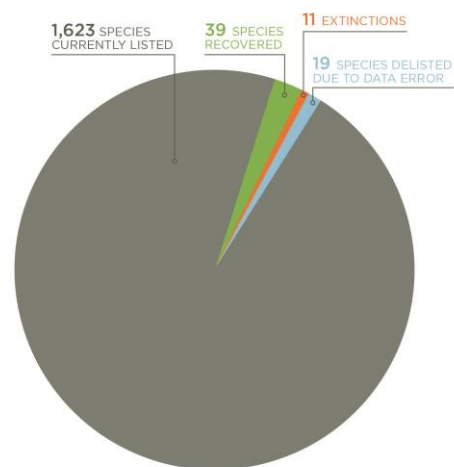
### Switzerland

According to the Environmental Performance Index, a study which rates countries based on their environmental sustainability, while also fulfilling many criteria, Switzerland was the highest scoring nation worldwide. In issues of biodiversity and its conservation, it scored 99.99<sup>8</sup> in the protection of endangered species.

### South Africa

In a complete contrast with Switzerland, South Africa scored as the 142<sup>nd</sup> nation, thus not fulfilling the criteria needed. With a score of 40<sup>9</sup>, when referring to the protection of diversity there is reason to be concerned.

Listings of Domestic Species under the Endangered Species Act



Source: U.S. Fish & Wildlife Service  
Graph listing the numbers of endangered species.

<sup>7</sup>"Biodiversity." *Central African Republic*:

*Manovo -Gounda St. Floris National Park*, <https://biodiversityasia.weebly.com/biodiversity.html>.

<sup>8</sup>"Switzerland." Environmental Performance Index, <https://epi.envirocenter.yale.edu/epi-country-report/CHE>.

<sup>9</sup>"South Africa." Environmental Performance Index, <https://epi.envirocenter.yale.edu/epi-country-report/ZAF>.

<sup>10</sup> *MrGesa*, 21 July 2019, <https://www.mrgesa.com/endangered-species-graph/>.

## Australia

Australia is responsible for 60% of the world’s loss in biodiversity between 1996 till 2008. Research conducted in November of 2017 examined the conservation status of animal and plant species in 109 countries. The researchers then compared the results to the funding for conservation. At the end of the research, Australia was found to have a biodiversity loss of almost 10%, ranking as one of the worse. The fact that the study linked adequate conservation funding with better survival of animal and plant species, makes it even more concerning that Australia, a country with a great number of rich ecosystems, will lose funding in its one of most important national environmental programs.

## Biodiversity Information System for Europe (BICE)

This European Union funded and based organization associates itself with biodiversity loss issues and cares to provide data and information on the latest news concerning the loss of biodiversity. It tackles every type of biodiversity loss, including mountainous, and proposes the implementation of a “green” plan, proposed by the European Union in 2020.

## The International Union for Conservation of Nature (IUCN)

The International Union for Conservation of Nature (IUCN) is a membership Union composed of both government organs and Non-Governmental Organizations (NGO’s). With the help of the communication and cooperation between governmental and non-governmental, it prioritizes the protection of the earth’s natural resources, as it has also made great strides in the proposal of measures to safeguard biodiversity.



The 15<sup>th</sup> Sustainable Development Goal of the United Nations.

## Global Mountain Biodiversity Assessment (GMBA)

The Global Mountain Biodiversity Assessment defines itself as: “...a platform for international and cross-disciplinary collaboration on the assessment, conservation, and sustainable use of mountain biodiversity”<sup>11</sup>. This Non-Governmental Organization (NGO) focuses on raising awareness of the biological richness found in mountain ecosystems. As a network they seek to influence stakeholders and political figures to implement laws for the sustainable use of mountainous biodiversity.

<sup>11</sup> “About GMBA.” About GMBA | Global Mountain Biodiversity Assessment (GMBA), [https://naturalsciences.ch/organisations/gmba/about\\_gmba](https://naturalsciences.ch/organisations/gmba/about_gmba).



## TIMELINE OF EVENTS

Date	Description of Event
1966	The Species Survival Commission published lists on endangered species, namely the Red Data Lists.
1973	The Convention on the International Trade of Endangered Species of Fauna and Flora (CITES) took place. This international agreement, between governments aimed to ensure, that wild animals, plants and generally ecosystems will not be harmed during procedures of international trade.
1982	The United Nations (UN) World Charter for Nature is created. The principles of this Charter vary from the respect for nature to all ecosystems being subjected to conservation. All in all, it remains a vital date in the road to the protection of biodiversity.
1987	The United Nations (UN) Brundtland Commission on Our Common Future took place. This particular meeting was of vital importance, since it was the first to define the term “sustainable development”. Defining an issue, helps governments and NGO’s associate themselves with it.
1992	The Earth Summit took place in Rio de Janeiro. Agenda 21 or LA21 was implemented and governments moved to advising local authorities to start implementing the plan. This Summit also resulted in the production of the Convention on Biological Diversity (CBD).
1992	As a product of the Earth Summit in Rio de Janeiro in 1992, the Convention on Biological Diversity (CBD) is signed the same year. This particular convention assisted governments of nations with integrating biodiversity and its protection into their national planning and priorities.
2000	The UN Millennium Summit took place and the MDGs (Millennium development goals) were decided. This Summit is known as the largest gathering of world leaders, who discussed many issues including environmental degradation and agreed to a set of goals.
2005	In 2005 the World Summit took place. Held in New York, this Summit proposed that all nations prepare their own strategy on the conservation of national recourses.
2010	International year for biodiversity.

## UN INVOLVEMENT: RELEVANT RESOLUTIONS, TREATIES AND EVENTS

It comes as no surprise that the United Nations has been more than involved in this environmental crisis. The United Nations has 17 goals it wants achieved by 2030. Considering that number **13** is “**Climate Action**” and number **15** concerns “**Life on earth**” it is vital for it to preserve biodiversity. After declaring 2002 as the International Year for Mountains and 2010 as the International Year of Biodiversity, it released a report whose main point concerned the extinction of animal species. Moreover, it held an official Conference on Biodiversity in 2018. Under the auspices of the United Nations the following conventions and resolutions have also been signed/passed:



United Nations (UN) campaign on declaring 2010 the International Year of Biodiversity and the decade following that date as the Decade on Biodiversity.

### Convention on Biological Diversity (CBD), Rio de Janeiro 1992

The Convention on Biological Diversity one of the three sustainable development conventions signed in the 1992 “Earth Summit” in Rio de Janeiro. The Convention aims at the sustainable use of the components of biodiversity and at its conservation. Moreover, it focuses on the equal and fair sharing of the benefits that the utilization of biological diversity has to offer. The agreement covers all ecosystems, species, and genetic resources.

### **Protocols under the Convention on Biological Diversity:**

- ⇒ Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, 29 October 2010,
- ⇒ Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 29 January 2000,
- ⇒ Nagoya - Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety. Venue and document Date, 15 October 2010;

### Convention on Conservation of Migratory Species (CMS or Bonn Convention)

This Convention aims to conserve terrestrial, marine and avian migratory species. Nations involved work together to conserve migratory species and their ecosystems by providing strict protection for the migratory species facing extinction, through a variety of measures concerning the management of specific species and through conducting research on the matter.

#### Ramsar Convention on Wetlands (1971)

The Ramsar Convention on Wetlands covers all aspects of wetland conservation and how it can be used in a wise manner, recognizing them as official ecosystems that are vital for biodiversity conservation and for the well-being of human communities, living in areas close to wetlands. Moreover, it provides the framework, through which the previously mentioned aspects can be abided by and which also promoted international cooperation on the issue.

#### Convention on International Trade in Endangered Species of Wild Fauna and Flora (1975)

This Convention was created to ensure that international trade does not threaten the survival of wild species and does not harm their environment. With the help of its appendices, the Convention proposes various means of protecting 30,000 plant and animal species.

#### International Treaty on Plant Genetic Resources for Food and Agriculture (2004)

The objectives of this International Treaty are the conservation and sustainable use of plant genetic resources in food and agriculture domains. The benefits of their sustainable use should be equally shared, in order to ensure food security and the sustainability of agriculture.



United Nations poster on biodiversity.

#### United Nations (UN) General Assembly (GA) Resolution 61/203 on 20 December 2006

This UN Resolution declared 2010 as the International Year of Biodiversity, in the hope of raising awareness on the issue.

## PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

Loss in biodiversity richness, especially when referring to a specific type of biodiversity, can take time to reverse. This is a reason why it is hard to track previous attempts on solving this issue. As previously mentioned, the United Nations and a variety of Non-Governmental Organizations (NGOs) have had major involvement in resolving the issue. However, the issue came to the attention of governments, due to the recent change in climate, not a long time ago and not much action has been taken except for the previously mentioned Resolutions or Summits. Awareness has also been raised by the European Union, which on its own, independently declared 2010 as the International Year of Biodiversity in Europe in support of the United Nations' attempts. Something that can be considered as an attempt is the Conference of the Parties (COP) which adopted a program on the protection of mountainous biodiversity.

## POSSIBLE SOLUTIONS

In the committee, delegates will be asked to draft resolutions in hopes of resolving this complicated issue.

Mountainous Biodiversity has been overlooked throughout the years and because our climate reached a breaking point the last decade governments have now started taking any climate action to protect it. It was not widely known how mountains, their ecosystems and the wise use of their resources could really dig humanity out of the hole we have put ourselves in. So, it is important that not only governments are aware of such advantages. Clauses that refer to raising awareness can be very helpful to solving the issue. Through the easy drawing of such information people can learn to protect and respect nature by means such as ecotourism which is beneficial for the preservation of mountain ecosystems. However, judging by the look of it, governments also need a boost, concerning climate action. Governments should be urged to identify any environmental issues that might be harming their own country's biodiversity and consequently the world's. Governments and government



Volunteer in the United Kingdom (UK) participating in an ecosystem cleaning program.

organs can proceed to actions such as naming and declaring areas as protected and animals or plants under extinction and moving on to informing how such extinction can be avoided. Of course, action should be taken on their behalf as well, in order to ensure that no species of flora or fauna will face any threat. According to many studies economic development can restore lost biodiversity. Most Economically Developed Countries (MEDCs) have an advantage concerning the conservation of mountainous biodiversity, since they have the ability to fund environmental programmes aiming to protect their environmental heritage. Ensuring that Less Economically Developed Countries (LEDCs), the majority of which have rich biodiversity, have the financial ability to fund previously mentioned programmes is of utmost importance.

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