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Student Officer:

Anke van Vliet

Issue:

Implementing measures to protect biodiversity

Forum:

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Name:	Anke van Vliet
Position:	President

Introduction

On the South American continent lay five of the world's most biodiverse countries; Brazil, Colombia, Ecuador, Peru and Venezuela. The world's most biodiverse habitat, the Amazon rainforest, is also on this continent. South America holds over a quarter of our forests and over 40% of our biodiversity.

However, over the past few decades there has been an alarming loss of the homes of all these diverse species. Not just in South America, but on our entire planet. The rapid loss of species is estimated to be 1.000 or even 10.000 times higher than the natural extinction rate. These extinctions are driven by human actions, such as deforestation for agriculture or pollution.

The pressures on habitats are often associated with the rapid economic growth of countries such as Brazil and Chile, which are on the list of fastest developing countries on Earth. Growing economies mean growing population and urban development, but together with the inequity in these regions, they form a major threat to nature.

Recently there has been growing awareness of the link between conservation of biodiversity and economic development: in most developing countries, environmental destruction usually results in some short-term economic growth, after which local economies decline or even collapse. On the other hand, when biodiversity is protected, this goes hand in hand with reducing poverty and stimulating sustainable economic growth.

In short: both current and future generations' welfare and wellbeing depends on the conservation of biodiversity, which is why it is of the greatest importance to find measures to protect biodiversity.

Definition of Key Terms

Biodiversity

Short for biological diversity. Refers to the variability among all living organisms from all sources, including terrestrial, marine, and other ecosystems and ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.

Diversity Index

A quantitative measurement system reflecting how many different types (e.g. species) are in a dataset (e.g. a community). They provide information about rarity or commonness of certain species in certain region.

Ecosystem

A dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

Environment

The totality of all external conditions affecting life, development and survival of organisms.

Eutrophication

The increase of nutrients in water ecosystems. This results in rapid growth of algae at the surface, decreasing the light intensity and oxygen concentration in the water and causes undesirable changes in ecosystems

Extinction

The condition arising from the death of the last organism of a species. When a species only survives in cultivation or captivity, it is considered extinct in the wild.

Habitat

The place or site where an organism naturally occurs. Habitats of species are lost due to various causes, including:

Habitat conversion – long-term changes in land or water use, for example: replacement of natural vegetation by crops; permanent flooding; drainage; surface mining

Habitat fragmentation – dividing a habitat into distinct pieces.

Natural extinction

Also referred to as background extinction rate. The rate of species extinction that would occur if humans were not around.

Threatened Species

Also referred to as endangered species. Species threatened with extinction. The International Union for Conservation of Nature (IUCN) has put together a so-called 'Red List', describing all threatened species. Currently there are more than 112,400 species on The IUCN Red List, with more than 30,000 species threatened with extinction, including 41% of amphibians, 34% of conifers, 33% of reef building corals, 25% of mammals and 14% of birds.

General Overview

Causes of biodiversity loss

The major threat to biodiversity in South America is posed by a result of different human actions. These actions include, among others:

Agriculture

In the past decades, people have been modifying territories in order to fit to our more expanded needs. This results in habitat loss and alteration, making it impossible for certain species to survive in what was previously their home. Furthermore, when farming, a major threat to primarily insects is the use of pesticides. Besides harming insects, these pesticides as well as fertilizers farmers often use, can end up in the ground and result in changes of composition. It could also end up in nearby waters, causing eutrophication.

Industrialized fishing

Certain types of fish are threatened with extinction wholly due to exploitation by industrialized fishing. In addition, when fishermen use nets to catch fish, often this leads to a lot of other species getting caught as well. The damage this does to entire ecosystems has already shown to be irreversible. Another problem caused is the damage to coral reefs.

Mining and pollution

Mining activities affect biodiversity in two ways. The first is direct, when for instance vegetation is removed. The second is indirect, but equally damaging, and includes acid drainage, high metal or other toxic chemical concentrations in rivers and soil pollution. These can also be a result from other types of pollution. Brazil has already discovered the consequences of their mining activities: in November 2016, two dams were disrupted, releasing a torrent of mud, with many waves carrying pollutants. These waves reached as far as 850 km and areas have been facing problems with their soil ever since that occurrence.

Climate change

Not just fishing, but also climate change affects coral reefs greatly. When temperatures rise, previous habitats become uninhabitable. In addition to these effects, all other biodiversity is vulnerable to climate change. For instance, the Andean glaciers melting or a change in rainfall seasons in the Amazon would greatly affect the ecosystems in South America.

Population growth

Finally, population growth and its associated effects on biodiversity remain a big threat on the entire continent. The clearance of vegetation to make room for infrastructure and urban development, forest and savannah being converted to agricultural sites, growing industrial areas, are all pressures with one single underlying cause: population growth as well as growing export economies. In addition, air pollution levels are increasing due to the previously mentioned urban development.

Effects of biodiversity loss

An example of an effect of biodiversity we have all seen are the Amazon Wildfires. Areas that previously remained unreachable have now been intruded by development of infrastructure for trade and transportation. This deforestation has resulted in environmental degradation, and an increase in wildfires. Responses by NGO's and governments were insufficient due to the environment being used as a means of promoting one's political agenda.

In South America, over 25% of the urban population is living in extreme poverty. It has been proven that there is a direct link between eradicating poverty and protecting biodiversity. At the 12th meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP-12) in Pyeongchang in 2014, Helen Clark, administrator of the UNDP, said the following:

"Human survival and wellbeing depend heavily upon the earth's biodiversity. Biodiversity loss not only has serious implications for our natural environment: it also undermines our livelihoods, health, and food and water security. [...]. Tackling poverty and creating economic opportunity goes hand in hand with protecting biodiversity. It will require leaders to see the links between the complex challenges we face and the solutions."

Other threats to endangered species

Illegal hunt and trade

After habitat destruction, wildlife trade is the second biggest threat to the survival of species on our planet. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has played a major role in preventing wildlife trade and has certainly helped, but many problems have yet to be solved. Indigenous people in the Amazon are involved in this matter as they are often encouraged by traffickers to hunt endangered species, despite this harming their own ecosystems.

Major Parties Involved

Argentina

Argentina is currently seeing whether it would be possible to include biodiversity in its constitution. They have launched the ENBPA, their Biodiversity Strategy and Action plan from 2016-2020. The national policy has been altered to ensure sustainable use and fair distribution of any benefits.

Bolivia

The Policy and Strategy for the Integral and Sustainable Management of the Biodiversity Action Plan (2019-2030) (*Política y Estrategia Plurinacional para la Gestión Integral y Sustentable de la Biodiversidad - Plan de Acción 2019-2030*) was accepted by Bolivia after being agreed on by indigenous people, the central as well as municipal governments and academic institutions. It promotes finding a sustainable path towards social inclusion and achieving the global agendas for biodiversity as well as sustainable and socioeconomic development.

Brazil

Brazil is home to the largest biodiversity of fauna and flora in the world, it is estimated to have 15-20% of the planet's biodiversity within its borders. Each year, new species are discovered still. The Amazon is home to many diverse species as well as various indigenous tribes which heavily depend on the conservation of biodiversity. PainelBio is the Brazilian Panel on Biodiversity and has been created to achieve collaboration between institutions, spread knowledge and support the achievement of the Aichi Targets. The national target of Brazil for 2020 was:

"By 2020, at least 30% of the Amazon, 17% of each of the other terrestrial biomes, and 10% of the marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through protected areas foreseen under the National System of Protected Areas (SNUC) Law (...)"

Chile

In 2013, the Chilean government launched a monitoring system to quantify carbon emissions. The aim of this system is to help productive sectors achieve the goals set by Aichi Biodiversity. Their action plan on biodiversity conservation emphasizes the participation and contribution of indigenous peoples, public and private sectors and researchers. Important steps have been taken in finding sources for renewable energy.

Colombia

Colombia has tried to improve the national environmental legislation through several ways, including a water tax, pollution tax and wood transport fees. They have put regional autonomous corporations (CARs) in place which are responsible for water management. These CARs acted differently compared to previous methods, which imposed fines and threatened to close down factories, but showed no results. These CARs gave businesses a choice: either reduce pollution and save money or keep polluting which would lead to increased costs. Results were positive: companies and municipal authorities invested in recycling methods for their waste, leading to a 26% decrease in organic waste and 52% decrease of waste in fresh water. The Colombian Política Nacional para la Gestión Integral de la Biodiversidad y sus Servicios Ecosistémicos (PNGIBSE), is oriented on increasing the resilience of ecosystems and promotes collaboration on local, regional, national and transboundary levels.

Ecuador

The Ecuador constitution was the first in the world to include the Rights of Nature and promotes the integration of biodiversity conservation on all levels.

Peru

Peru adopted the '*Estrategia Nacional de Diversidad Biológica al 2021 y su Plan de Acción 2014-2018*' which takes into account the wish as well as the extensive knowledge of indigenous peoples and promotes their active participation as well as that of the public.

Venezuela

The '*Estrategia Nacional para la Conservación de la Diversidad Biológica de la República Bolivariana de Venezuela*' was adopted in 2010.

Timeline of Key Events

<i>Date</i>	<i>Event</i>
1975	The <i>Convention on International Trade in Endangered Species of Wild Fauna and Flora</i> enters into force
1992	150 government leaders sign the <i>Convention on Biological Diversity</i> at the Rio Earth Summit
2003	The <i>Cartagena Protocol on Biosafety to the Convention on Biological Diversity</i> is entered into force.
2010	The UN General Assembly announces 2011-2020 to be the Decade on Biodiversity
2014	The <i>Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity</i> is entered into force
2015	All UN member states accept the Sustainable Development Goals
15-18 October 2020	The Convention on Biological Diversity will adopt a post-2020 global biodiversity framework

Previous attempts to resolve the issue

As shown in the above timeline, CITES was entered into force in 1975, presenting a framework that could be adapted by countries in their national legislations. However, many countries do not have the capacity of enforcers of these laws, or prosecutors to address the environmental crimes committed.

In 1992, the Convention on Biological Diversity was created. Member parties are expected to support and promote sustainable measures for the conservation of biodiversity, and they committed to significantly reducing the loss of biodiversity by 2010. Unfortunately, this did not happen:

The 2010 biodiversity target has not been met at the global level. None of the twenty-one sub-targets accompanying the overall target of significantly reducing the rate of biodiversity loss by 2010 can be said definitively to have been achieved globally, although some have been partially or locally achieved. Despite an increase in conservation efforts, the state of biodiversity continues to decline, according to most indicators, largely because the pressures on biodiversity continue

to increase. There is no indication of a significant reduction in the rate of decline in biodiversity, nor of a significant reduction in pressures upon it.

- Secretariat of the Convention on Biological Diversity (2010), *Global Biodiversity Outlook 3*, May, 2010

The CBD has launched multiple action strategies to promote biodiversity conservation, including the Cartagena protocol, the Nagoya protocol and the Aichi biodiversity targets. The fifteenth meeting of the CBD is set to be in October 2020, where a new, updated post-2020 framework will be developed.

Possible Solutions

The first and most obvious solution would be changing agricultural policies in ways which would decrease habitat destruction and alteration. However, this is easier said than done, as the growing population has high demands. An interesting possibility which has been under development for a few years is horizontal farming.

In the Brazilian Amazon, the effectiveness of different categories of protected areas were compared. It showed that indigenous lands were most effective in order to inhibit deforestation, which supports the thesis that community-managed forests present lower deforestation rates than protected forests. The key for all countries in South America is to include indigenous peoples in decision-making on biodiversity conservation measures, as these people are often affected directly by decisions and often have extensive knowledge on their habitats.

Integration of consideration of the conservation of biodiversity must be promoted in all decision-making processes, including those not directly related such as tourism and education. Businesses and local institutions should be encouraged to reduce pollution and increase sustainable energy-usage in positive ways. The Andes mountain chain as well as the Amazon region have potential for providing hydroelectric power, which could result in sustainable benefits for these regions.

Awareness of the values and importance of biodiversity varies per country. It can be raised in many ways, for instance through school education, by mainstreaming biodiversity into government policies, campaigns by NGO's, and so on.

Transnational collaboration, especially in South America, can be of great value to share knowledge and effective ways to conserve biodiversity, as well as controlling the international illegal trade of endangered species.

Appendix/Appendices

1. Another interesting solution you could look into is the possibility of Genetic Engineering, You can find out more about it by clicking at this link:

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<https://e360.yale.edu/features/should-new-genetic-engineering-be-used-as-a-conservation-tool>

2. Find out more about the future conferences and planning of the Convention on Biological Diversity here:

<https://www.cbd.int/conferences/post2020>

3. Many countries have launched national biodiversity strategies and action plans, some of which have already been included in this report under 'Major Parties Involved'. I would advise more extensive research into your countries' specific plans and strategies. You can find a lot of useful information here:

<https://www.cbd.int/nbsap/about/latest/#pe>

4. Find out more about the Sustainable Development Goals and what they entail:

<https://www.unenvironment.org/explore-topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-13>

<https://www.unenvironment.org/explore-topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-14>

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<https://www.iucn.org>
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