Agenda Item: Protecting Endangered Species against Climate Change

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1.Letter from the Secretary General

Dear Delegates,

It’s an indescribable honour to welcome you to the AKA Model United Nations 2025. As the Secretary General of this conference, I am truly excited to witness your debates as you work to find meaningful solutions to global issues.

As you attend this conference, I strongly encourage you to open your mind to new ideas. This year, our academic team has worked diligently to provide you with guidelines that will support your MUN journey. We advise you to approach the agenda earnestly. Over many years, the world has changed in both bitter and hopeful ways, and through this conference, we aim to emphasize the importance of world peace more than ever.

AKA Model United Nations is a place where your voice can be heard. We believe that this conference is a great opportunity for you to express yourselves and discuss current topics. Our hope is that AKA Model United Nations will open new doors for you.

I look forward to meeting you all and witnessing the remarkable debates ahead.

Warm regards,

Oğuz TEKİNSOY
Secretary-General
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2.Letter from the Under Secretary General of UNEP

Dear Distinguished Delegates,

It is my honor to welcome you all to AKAMUN'25. It will be a big pleasure for me to share this experience with all of you. As the Under Secretary General of UNEP, I am pleased to present our committee's agenda item: "Protecting Endangered Species Against Climate Change." This topic lies at the heart of UNEP's mandate and reflects one of the most pressing global challenges of our time.

Across the world, rising temperatures, shifting weather patterns, ocean acidification, and habitat degradation are accelerating the decline of countless species. Climate change does not simply threaten biodiversity; it undermines entire ecosystems, weakens food security, disrupts livelihoods, and erodes cultural and economic stability. From the rapid bleaching of coral reefs to the shrinking habitats of polar and mountain species, the impacts are profound and far-reaching.

In this committee, you will take on the responsibility of developing comprehensive, innovative, and cooperative solutions. As you prepare for debate, I urge you to reflect on the interconnected nature of climate systems and biodiversity. Your resolutions have the power to inspire real-world change, and your ideas can help shape a more resilient and sustainable world for future generations. I look forward to witnessing your diplomacy, creativity, and commitment throughout this conference. You can contact me if you have any questions via the e-mail address below.

Sincerely,

Nehir Çetinalp

Under Secretary General of UNEP

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3. Introduction to the Committee

a. What is UNEP?

The United Nations Environment Programme (UNEP) is an international organization that works to protect the environment and promote sustainable development worldwide. It was created in 1972 to help countries understand environmental problems, share knowledge, and work together to find solutions. UNEP focuses on many important issues, including climate change, pollution, plastic waste, deforestation, and protecting wildlife and plants. UNEP's main goal is to create a healthier and safer world for people, animals, and nature. It collects scientific data, publishes reports, and advises governments on how to reduce pollution, use resources wisely, and protect ecosystems. UNEP also supports projects that help communities adapt to environmental changes and encourages countries to follow international agreements on climate and conservation. One of UNEP's key roles is helping to protect endangered species and their habitats. Many animals and plants are threatened by climate change, habitat loss, and human activities. UNEP works with countries, scientists, and organizations to protect natural areas, prevent illegal hunting, and restore ecosystems. These efforts help ensure that nature can survive and continue to benefit future generations. In addition, UNEP raises awareness about the importance of caring for the environment. It encourages governments, communities, and individuals to take action to protect our planet. By guiding global efforts and supporting practical solutions, UNEP helps the world move to a more sustainable, safe, and balanced future.

4. Introduction to the Agenda Item

a. Causes and effects

Biodiversity loss is occurring at an alarming rate, with recent estimates showing that species extinctions are currently 10 to 100 times higher than the natural course of events. This is largely due to human activities such as deforestation, habitat fragmentation, urbanization, agricultural intensification, overexploitation, land-use change, invasive species, pollution, and climate change. The main direct cause of biodiversity loss is land-use change, which accounts for approximately 30% of global biodiversity decline. The second is overexploitation, which accounts for about 20%. Climate change is the third most significant direct cause of biodiversity loss, and together with pollution, it accounts for about 14%.

One of the key reasons for habitat fragmentation is **deforestation**. Some animal species depend on single trees for nesting, shelter, or food resources; however, deforestation can remove hundreds of thousands of hectares in a single decision. Deforestation destroys habitats, and often the species living in forests are also harmed. The number of species decreases as displaced animals that cannot survive outside their natural habitats die. As populations decline, some species become extinct, and biodiversity and ecosystems are harmed.

Overexploitation occurs when a natural resource is depleted faster than it can be replenished. The majority of deforestation for mining is in pursuit of gold and coal, and it is a major contributor globally. Accessing large mineral deposits can require large areas of land, which pollutes the forest by dumping waste on the forest floor, harming vegetation and

habitats. All of these activities trigger soil degradation in the end. The decline in soil quality affects biodiversity directly and deeply, such as reducing crop quality in agricultural sectors, disrupting the food chain, killing soil animals and bacteria, strongly decreasing plant species, and lowering the capacity for carbon storage.

Urbanization is one of the critical types of overexploitation which strongly supports habitat fragmentation and eliminates forests, wetlands, mountains etc. According to the Nature in urban century report, unrestrained urbanization wiped out 190.000 km '2 in 1992-2000 which corresponds to %16 of all the habitat loss. Urbanization is one of the main causes of land-use change which affects biodiversity most.

Invasive species are species that are introduced into new areas and, once there, are able to adapt, become established, reproduce, and spread, colonizing the environment, creating new populations, and impacting biodiversity, health, and the economy. According to the 2023 report by IPBES, the number of invasive alien species and their impacts are increasing across all regions of the Earth. The global economic costs of invasive alien species have increased 4 times faster every decade since 1970. Invasive species have contributed, alone or together with other causes, to 60% of recorded global extinctions and are the only cause in 16% of documented global extinctions.

b. Past agreements and actions

i.Lacey Act

Enacted in 1900, the Lacey Act is one of the oldest and most effective wildlife protection acts worldwide. The main reason for the Lacey Act is to prevent poaching in the USA. In 2008, the Lacey Act was expanded by Congress to impose strict penalties on the import of timber and wood products obtained illegally in any country, including those from illegal logging, and to ensure the protection of the forestry sector in the USA. The 2008 amendment significantly increased responsibility along the timber supply system, particularly for importers. The amendment holds importers of plants or plant products responsible for ensuring that imported plants or plant products are legally sourced. According to the 2015 report by the UCS (Union of Concerned Scientists), imports of illegal timber had decreased by 32–44% since the amendment was passed, and the law had significant impacts on high-risk regions. Additionally, UCS indicates that most of the decrease in imports came from products originating in high-risk countries such as China, with China falling from 80% to 45% in 6 years.

ii.Paris agreement (2015)

It entered into force on 4 November 2016. 195 parties have joined the Paris Agreement. The Agreement aims to contain global warming and limit the temperature increase to 1.5°C above pre-industrial levels. The risk of species extinction increases with each degree of temperature rise. Moreover, limiting climate change is crucial for protecting biodiversity. Wetlands (including swamps and peatlands) and mangroves store carbon very effectively, reducing greenhouse gases in the atmosphere. This function helps maintain climate balance and provides safe habitats for many species living in these ecosystems. The UN indicates that climate change and biodiversity need to be tackled together to reach sustainable development goals.

iii.Convention on Biological Diversity (CBD,1992)

The CBD (Convention on Biological Diversity) is an international treaty ratified by 196 countries and the European Union and entered into force in 1993. The three overarching goals are the conservation of biological diversity, the sustainable use of biodiversity, and the fair and equitable sharing of benefits. Moreover, the CBD ensures the development of international partnerships, supports the protection of land, shorelines, seas, tropical ecosystems, wetlands, forests, coral reefs, mountains, and tundra, and these measures clearly and effectively prevent further biodiversity loss.There are key protocols and agreements under the CBD. The main goals of the Cartagena Protocol on Biosafety are to protect biodiversity from potential risks posed by living-modified organisms. It also urges the establishment of an Advance Informed Agreement (AIA), promotes the Precautionary Principle, and ensures risk assessments and transparent information sharing through the Biosafety Clearing-House (BCH).The second critical protocol is the Nagoya Protocol on Access and Benefit-Sharing. This protocol aims to create a legal framework to ensure benefits derived from genetic resources are shared fairly with the countries and communities providing those resources.The third is the Kunming-Montreal Biodiversity Framework. This protocol aims to create a global action plan and ensure the protection of at least 30% of the world's lands and oceans by 2030.

iv.Ramsar Convention on Wetlands of International Importance

The Convention on Wetlands came into force in December 1975. It has 3 main pillars of activity to ensure the conservation of wetlands, promote their sustainable use, and encourage international cooperation and knowledge sharing. Governments have to implement these 3 pillars for wetlands, including all lakes and rivers, swamps and marshes, wet grasslands, peatlands, oases, estuaries, deltas and tidal flats, mangroves and other coastal areas, coral reefs, and all human-made sites. This protocol provides the protection of habitats and decreases biodiversity loss.

v.Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

The CITES convention was agreed upon by representatives from 80 countries in 1973. CITES is an international agreement that ensures trade in wild animals and plants does not threaten the survival of species. It plays a critical role in protecting endangered species and maintaining biodiversity worldwide. CITES has three main appendices that classify species based on the level of protection they need. Appendix I includes species that are threatened with extinction. These species cannot be traded for commercial purposes. Trade is allowed only for scientific research, captive breeding programs, or other strictly regulated purposes. Appendix II includes species that are not currently threatened but could become so if trade is not properly monitored. Trade is permitted as long as the animals or plants are accompanied by the appropriate CITES documentation to ensure legal and safe practices. Appendix III contains species that are managed by individual countries but require the cooperation of other countries to control international trade. Overall, the CITES appendices are essential for ensuring that international wildlife trade is legal, sustainable, and does not harm the survival of species. Through its regulations, CITES helps conserve biodiversity and supports global efforts to protect endangered animals and plants.

c. Major Human activities affecting biodiversity

Human activities such as urbanization which is one of the most significant activities, pollution, climate change, land-use change, overexploitation, agricultural expansion are the main causes of biodiversity loss. All of these human-induced impacts disrupt the balance of ecosystems and lead to a significant decline in biodiversity.

Urbanization is one of the major causes of urbanization is migration from rural areas to urban areas for better health, education, and transportation. As city populations increase, cities must ensure better living conditions for the growing population. This leads to the construction of more houses, roads, and bridges, as well as metro lines and highways to improve transportation. Another main cause of urbanization is industrialization. Labor demand is increasing worldwide due to population growth in urban areas, and this situation affects the number of factories, migration patterns, contributes to climate change, and increases toxic gas emissions. Industrialization and urbanization are accelerating as a result of these major challenges.

Overexploitation

Overexploitation is the second most significant cause of biodiversity loss worldwide. In general, people maintain and strongly contribute to the increase of overexploitation through rapid population growth, technological developments, food demand, and commercial needs. Overexploitation has major types, including overfishing, water overuse, deforestation, soil degradation, illegal trading, and poaching.

Poaching and illegal wildlife trade are global crises driven by powerful international criminal networks. Elephants, sea turtles, African grey parrots, pangolins, and rare tree species are among the most targeted species. It is the largest direct threat to the future of many endangered species. As human populations increase and global demand intensifies, thousands of species are exploited, with many populations pushed to the brink of extinction. Understanding and preventing this illegal trade is critical to ending wildlife crime and protecting critical ecosystems and biodiversity. Overexploitation of water resources in industrial and agricultural areas affects ecosystems, causing habitat degradation and contributing to biodiversity loss, especially due to climate change. Many water systems that sustain ecosystems and support a growing human population are stressed. Rivers, lakes, and aquifers are drying up or becoming too polluted to use, and more than half of the world's wetlands have disappeared. Agriculture consumes more water than any other source and wastes much of it due to decrease of productivity. Deforestation significantly contributes to climate change. Trees protect humans from erosion, floods, and air pollution, and help maintain the carbon cycle by absorbing carbon dioxide. Forest fires have significant impacts on biodiversity and ecosystems, destroying habitats such as forests, grasslands, and wetlands, causing significant harm to many species. Moreover, cutting down trees and destroying forests for activities such as mining and agriculture also causes serious damage to biodiversity.

Pollution

The most significant cause of climate change is pollution, which is divided into three main sections: air pollution, water pollution, and soil pollution. All types of pollution strongly affect biodiversity, especially by supporting the increase of climate change. Some examples of these harmful impacts are acid rain, carbon emissions, factory waste, and chemical waste.

Air Pollution

One of the most crucial causes of increased air pollution is the use of fossil fuels, transportation, chemical fertilizers, pesticides, deforestation, and forest fires. Harmful gases such as carbon monoxide, nitrogen oxides, and sulfur dioxide affect animals' respiratory systems and damage plants. Moreover, these toxic gases rapidly destroy ground-level ozone, which reduces photosynthesis, slows plant growth, and makes plants more vulnerable to pests and diseases. Under the UNECE Air Convention, a critical ozone exposure limit for forest protection is also defined. Extreme use of nitrogen fertilizers and pesticides can release large amounts of nitrogen oxides into the atmosphere and increase ground-level ozone formation. These conditions cause a 10–20% decrease in agricultural productivity, according to a 2022 FAO report. Motor vehicles also continuously release carbon monoxide, nitrogen oxides, and particulate matter, contributing to the greenhouse effect. According to a 2021 WHO report, more than 50% of air pollution in cities is caused by vehicles. Transportation is therefore an important source of air pollution.

Water Pollution

The main causes of water pollution are plastic waste, fertilizers, pesticides, and industrial waste. Many species of fish, amphibians, and invertebrates are highly sensitive to changes in water quality and are among the most affected marine species. Contaminants like heavy metals and pesticides can alter reproductive systems, reduce populations, and sometimes lead to extinction. These circumstances not only endanger marine life but also impact biodiversity and disrupt the food chain. According to a 2021 UNEP report, there are an estimated 390 million tons of plastic waste in the world's oceans. Moreover, these problems directly threaten drinking water and marine species. Water pollution also destroys wetlands, mangroves, and estuaries, which are nature's water purifiers. Pollution reduces the natural filtration capacity of wetlands and destroys the habitats of plants and animals. Industrial wastes, such as heavy metals and oils, flow into aquatic areas, affecting marine species and polluting drinking water.

Soil Pollution

The role of soil pollution in biodiversity loss must not be underestimated. The main causes of soil pollution are the use of pesticides, fertilizers, chemicals, accumulation of nitrogen, and heavy metals. Pesticides are not only deadly for target species but also harm other organisms, such as worms, beneficial insects, and soil bacteria. Acid rain, which forms when sulfur oxide and nitrogen oxide combine, strongly damages soil minerals. Mining activities destroy large natural areas worldwide. Mining waste also contains heavy metals, which contribute to soil pollution. Industrial waste contains heavy metals as well, similar to mining waste. Soil degradation caused by these factors affects water-holding capacity, decreases agricultural productivity, harms beneficial soil species, increases erosion rates, and eventually impacts climate change.

Climate Change

Climate change refers to long-term changes in temperature and weather caused by human activities, which is one of the biggest problems worldwide and directly affects all species. Climate change plays an increasingly important role in the decline of biodiversity, and the risk of species extinction increases with every degree of warming. The main cause of climate change is greenhouse gas emissions, and the second is deforestation. The increase in temperature directly affects particularly sensitive species and negatively impacts plant photosynthesis and growth. Melting icebergs cause rising sea levels, which threaten mangroves and other aquatic areas. The use of chemical fertilizers and pesticides in agriculture introduces large amounts of nitrogen into the soil and water. Nitrogen accumulation causes eutrophication in aquatic ecosystems. Rising temperatures and extreme weather events also reduce the productivity of agricultural lands. Approximately 20–25% of agricultural areas worldwide are exposed to yield losses due to climate change, which is a crucial threat to biodiversity. The destruction of forests, pollution of wetlands, rising ocean temperatures, loss of productivity in agricultural lands, and ozone exposure disrupt ecosystem balances and put many species at risk of extinction.

d.Technological Impacts on Biodiversity

i.Harmful Industrial Technologies

One of the unrestrained **industrial technologies** is the use of heavy machinery such as bulldozers, road graders, feller bunchers, drilling machines, rock crushers, and tunnel boring machines, which strongly cause mountain damage. The heavy machinery sector rapidly increases deforestation, land-use change, and especially habitat fragmentation. **Mining technologies** also pose a critical threat to biodiversity through various techniques and machines. Some of these techniques include open-pit mining, hydraulic mining systems, explosive blasting technology, fracking technology, and oil drilling rigs, all of which cause sudden and harmful destruction, pollution, soil degradation, marine species mortality, and erosion. **Agricultural Technologies** strongly contribute to soil degradation. Extreme use of chemicals, especially pesticides and herbicides, is not only deadly for harmful insects but also for soil microorganisms, aquatic organisms, and beneficial insects. According to the Congressional Research Service, one significant example is that approximately 30% of bee colonies in the USA have disappeared because of chemicals. Moreover, extreme use of nitrogen and phosphorus causes eutrophication, which decreases oxygen in aquatic ecosystems and leads to fish kills. Large-scale irrigation systems also affect biodiversity due to excessive water use. **Energy and fossil fuel technologies** mostly cause pollution through gas pipelines, oil refineries, and coal-fired power plants. Especially coal-fired power plants release large amounts of carbon dioxide, sulfur dioxide, and nitrogen oxides into the atmosphere. These gases cause an increase in carbon emissions, air pollution, and acid rain, which kills plants, damages soil and water systems, and eventually harms ecosystems. Furthermore, chemical wastes from oil refineries lead to water and soil pollution. **Chemical Facilities and Industrial Waste** have a crucial role in affecting ecosystems. Heavy metals and toxic chemicals, such as lead, mercury, arsenic, cadmium, phenols, and polycyclic aromatic hydrocarbons, released from factories, directly contaminate soil and water sources. This pollution disrupts the natural habitats of animals and plants, reduces species populations, intoxicates marine animals, and negatively affects ecosystem balance worldwide. **The petrochemical industry** involves the processing of petroleum and natural

gas and their conversion into various chemicals. The greenhouse gases and toxic gases released from these facilities quickly and effectively climate change, degrade air quality, and negatively affect biodiversity.

ii.Biotechnology and Genetic Risks

Genetic engineering is the field of biotechnology that involves directly modifying an organism's DNA to introduce new traits, enhance existing ones, or remove undesirable characteristics. By the mid-20th century, genetic engineering was recognized as a separate field of science. Crops can be genetically modified to tolerate extreme weather conditions, reducing food insecurity caused by climate change. Researchers have since developed new technologies, such as CRISPR and gene drives, which can threaten biosecurity, cause species to go extinct, reduce reproductive capacity, and disrupt population structures. This can collapse the food chain and affect entire ecosystems. Additionally, the effects of biotechnology and genetic engineering should not be underestimated. According to a 2018 report in Nature Biotechnology, scientists genetically modified Anopheles mosquitoes, and as a result, the entire target population was completely suppressed. However, the project also highlighted significant ecological risks and ethical concerns, as releasing gene drives into the wild could irreversibly alter ecosystems and affect non-target species. Biotechnology also plays a crucial role in biodiversity. For example, genetically modified organisms can spread as invasive species and reproduce with wild species. Moreover, genetically resistant organisms can lead to increased resistance in insects and microorganisms, which may increase the use of pesticide.

e. Challenges in Implementation

The pressures exerted by global warming on ecosystems significantly affect the scope and effectiveness of efforts aimed at protecting endangered species. Within this context, the implementation of conservation practices encounters various institutional, scientific, and environmental challenges. First and foremost, the regional variability of climate change impacts complicates the planning of conservation strategies. The rapid transformation of species' habitats increases habitat loss and leads to the inadequacy of existing protected areas. This situation necessitates the identification of new conservation zones and the establishment of ecological corridors; however, it also introduces various administrative obstacles in terms of land-use planning. Moreover, the limitations of scientific data and the insufficiency of long-term ecological monitoring hinder the development of conservation programs tailored to species-specific needs. The rapidly changing nature of global warming renders existing data outdated in a short period of time, thereby creating uncertainty in decision-making processes. Financial constraints also constitute a significant challenge. The sustainability of conservation projects requires long-term budget planning; however, the predominantly short-term nature of project funding reduces the overall effectiveness of these efforts. In addition, the lack of national and international coordination prevents the efficient use of resources and limits the capacity for collective action. Lastly, insufficient public awareness weakens the societal participation component of conservation initiatives. Although raising awareness among local communities and ensuring their involvement is critical for the protection of endangered species, communication and educational activities in this regard often remain inadequate. Considering all these factors, it becomes evident that conservation practices aimed at protecting endangered species in the face of global warming must be supported with scientifically grounded, multi-stakeholder, and sustainable strategies.

f. International and Regional Frameworks

i. EU Natura 2000 Network

Natura 2000 is the largest coordinated network of protected areas in the world. Established in 1992 to safeguard Europe's most valuable and threatened species and habitats, its area has steadily increased. In 2023, there were 27,165 Natura 2000 sites, covering 18.6% of the European Union land area and 10.5% of its marine territory. Effective management of these sites is key to achieving Natura 2000 conservation aims. EU Member States still need to make significant efforts to establish and effectively implement conservation measures and management plans.

ii. Regional Climate Action Plans

Climate change creates rapid and often irreversible impacts on ecosystems, severely threatening the habitats of endangered species. This situation necessitates the development of regional action plans that are based on scientific data and tailored to local ecological conditions. These plans involve assessing climate and habitat risks, identifying vulnerable species and critical habitats, and implementing conservation strategies such as habitat restoration, the creation of ecological corridors, and the strengthening of protected areas. The success of these efforts depends on cooperation among local authorities, scientific institutions, NGOs, and local communities, as well as sustainable funding and continuous monitoring. Within this framework, regional action plans play a crucial role in mitigating the adverse effects of climate change and preserving the presence of species within their ecosystems.

iii. African Union Biodiversity Strategy

The African Union has developed comprehensive biodiversity strategies to protect the continent's unique yet fragile ecosystems and has established a shared vision across the continent in this regard. The African Biodiversity Strategy and Action Plan (ABSAP) includes key objectives such as protecting endangered species, promoting ecosystem-based management practices, and strengthening the participation of local communities in natural resource management. In addition, the African Environment Strategy ensures that biodiversity is addressed in an integrated manner with energy, agriculture, and water policies in response to environmental threats such as climate change, land degradation, deforestation, and depletion of water resources. The African Union-backed "African Green Wall Initiative" aims to halt the advance of the Sahara Desert, revitalize ecosystems in arid areas, and carry out restoration work on millions of hectares of land, thereby improving habitats for numerous species. The transboundary conservation areas program, implemented across the continent, promotes the protection of shared ecosystems between countries, contributing to securing the life cycles of migratory species and strengthening the fight against poaching and illegal wildlife trade. The African Wildlife Strategy also focuses on protecting endangered species such as elephants, rhinos, and gorillas, and expanding the

network of protected areas. All these efforts demonstrate that the African Union, recognizing that biodiversity loss is directly linked to climate change, promotes practices such as climate-resilient protected area planning, drought-resistant ecosystem management, and effective monitoring systems. This comprehensive framework offers a holistic approach that aims to protect Africa's natural heritage and advance nature-based sustainable development simultaneously.

g. Effects of Other UN Bodies

Global warming is a global crisis that affects the world's ecosystems not only environmentally, however also politically and socioeconomically. Those most affected by this crisis are many endangered species, ranging from polar bears to coral reefs, orangutans to sea turtles. The threat of extinction for these species represents not only an ecological loss but also a test for the international order aimed at protecting biodiversity, one of the fundamental priorities of the United Nations system. For this reason, various UN bodies play critical roles at both the scientific and political levels in protecting these species.

Among these bodies, the United Nations Framework Convention on Climate Change (UNFCCC) plays the most central role. The Paris Agreement and annual COP summits, which have taken shape around the UNFCCC, define global carbon reduction strategies to protect species threatened with extinction due to melting ice, such as polar bears. These political processes provide an international framework to slow down ecosystem collapse by compelling states to establish legally and diplomatically binding emission targets.

At the center of the scientific dimension is the Intergovernmental Panel on Climate Change (IPCC). The assessment reports prepared by the IPCC scientifically demonstrate, for example, how coral reefs face the risk of extinction in scenarios of 1.5°C and 2°C temperature increases, or how amphibian species living in high-altitude ecosystems are squeezed into shrinking habitats due to temperature stress. These reports serve as the strongest reference for governments when making policy decisions at COP meetings.

The World Meteorological Organization (WMO) provides global data on the climate system, scientifically measuring how temperature increases affect species in polar regions, how rising sea levels transform coastal ecosystems, and the consequences of ocean warming on whale species. The data provided by the WMO forms the basis for both IPCC reports and national conservation policies.

The United Nations Development Programme (UNDP) is an organization that makes species conservation part of its development policies. UNDP provides funding for climate adaptation strategies in areas with high biological diversity, offers alternative livelihoods to local communities, and promotes the conservation of ecosystem services. For example, developing ecotourism models on sea turtle nesting beaches or implementing sustainable forest management programs in orangutan habitats are among the policies supported by UNDP.

h. History of Global Conservation Efforts

The history of global conservation efforts to protect endangered animals from the impacts of climate change has deep roots and has expanded dramatically over the past century. Early conservation actions in the late 1800s and early 1900s focused mainly on preventing the decline of wildlife caused by overhunting and habitat destruction, leading to the creation of some of the world's first national parks and wildlife refuges. By the mid-20th century, concern about species loss grew into a coordinated global movement. Major milestones included the establishment of the International Union for Conservation of Nature (IUCN) in 1948 and the adoption of the 1973 Convention on International Trade in Endangered Species (CITES), which regulated the international trade of threatened wildlife. The United Nations played a crucial role in widening conservation efforts: the 1972 UN Conference on the Human Environment laid the foundation for global environmental cooperation; the 1992 UN Convention on Biological Diversity (CBD) committed nations to protecting ecosystems and species; the 1997 Kyoto Protocol and the 2015 Paris Agreement highlighted how climate change accelerates biodiversity loss; and the UN Environment Programme (UNEP) continues to lead global initiatives to support climate-resilient conservation strategies. As scientific understanding of climate change strengthened in the 21st century, conservation efforts expanded to include climate-adaptive actions such as restoring degraded habitats, creating transboundary wildlife corridors, safeguarding marine ecosystems through UN-backed marine protected areas, and developing early-warning systems for species at risk. Today, global conservation represents a collaborative effort across nations, communities, scientists, and international institutions—particularly the United Nations—reflecting the understanding that protecting endangered animals is inseparable from combating climate change and preserving the stability of the planet's ecosystems.

i. Environmental Consequences of Species Extinction

Biodiversity loss and species extinction not only mean loss of animals or plants. It affects the functioning of the ecosystem and human life. Each species plays a specific role in the functioning of the ecosystem. Some species are essential links in the food chain, others pollinate plants or disperse their seeds and others contribute to maintaining the natural balance by controlling harmful organisms. When one species disappears, this ecological balance is disrupted, and other species are negatively impacted in a cascading effect. Declining biodiversity reduces the resilience of ecosystems to environmental changes like climate change, floods and droughts. Humans are also affected by this process, as a healthy environment provides people with access to clean water and food sources and safe living spaces. The IUCN (International Union for Conservation of Nature) plays a crucial role in addressing this issue. The IUCN Red List demonstrates the conservation status of species worldwide and indicates which species are at risk of extinction. This list allows governments and environmental organizations to identify priority species and conservation areas. Therefore species conservation is vital not only for nature but also for human societies. Sustainable development with habitat protection and public education are fundamental steps in this process.

j. Possible Solutions and Policy Recommendations

Climate change is one of the biggest threats for endangered species. Drought temperature differences, fires and melting glaciers are destroying the natural habitats of species. Therefore, countries and international organizations must develop joint solutions.

1.Protect the Natural Habitats

Many species need safe and healthy habitats to live. Forests, lakes, wetlands, and marine ecosystems must be protected. Damaged areas should be restored through reforestation, wetland recovery, and coastal rehabilitation. Countries should also create wildlife corridors that allow animals to migrate safely as the climate changes.

Helping species adapt to new conditions

Climate change is making it harder for many species to survive in their natural habitats. Some animals lose food, some plants cannot grow, and some face new predators or diseases. Humans can help these species adapt by taking several actions:

Assisted migration: moving species to safer areas with better climate conditions so they can survive,

Assisted breeding: raising endangered species in safe facilities until their population is strong enough to return to the wild,

Protecting genetic diversity: keeping a variety of genes in plants and animals to increase their chances of adapting to new conditions,

Improving habitats: planting climate-resistant plants, restoring water sources, and removing harmful invasive species,

Community support: involving local people to monitor species, protect habitats, and participate in conservation efforts.

By combining careful planning, scientific research, and cooperation between governments, conservation organizations, and local communities, many endangered species can survive the challenges of climate change and continue to play important roles in ecosystems.

2.Reducing human pressures on wildlife

Human activities make many species more vulnerable to climate change. Factors such as deforestation, pollution, unplanned urbanization, illegal hunting, and overfishing disrupt species' habitats, increasing their risk of extinction. Therefore, reducing human pressures is a fundamental strategy for protecting endangered species. Protecting habitats is one of the most important steps in this strategy. Preventing the destruction of natural areas such as forests, wetlands, and seashores helps maintain species' shelter and food needs. Governments can help restore damaged areas by establishing protected areas and implementing ecosystem restoration projects. Reducing pollution is also a vital step. Plastic waste, chemicals, and industrial waste negatively impact both animals and plants. Better waste management, limiting harmful substances, and raising public awareness about environmental issues can help prevent these problems.Illegal hunting and illegal trade are pushing many species closer to the threat of extinction. Therefore, stricter laws, effective control mechanisms, and awareness campaigns are crucial. Similarly, promoting sustainable fishing and agricultural practices protects the natural balance of ecosystems.Involving local communities in this process is also invaluable. Public awareness and support for conservation efforts play a crucial role in reducing pressure on wildlife. With all of this stuff, human pressures are reduced and species become more resilient to the challenges of climate change.

3.Slowing Down the Climate Change

Slowing down climate change means reducing the speed at which global temperatures rise and environmental conditions shift. When climate change happens too quickly, many species cannot adapt in time. Animals may lose their habitats, struggle to find food and water, or fail to reproduce successfully. Plants may no longer grow in places where they once lived because of temperature and rainfall changes. Climate change causes serious harm to endangered species. Rising temperatures, droughts, wildfires, and intense storms damage ecosystems and make survival harder. Polar species lose sea ice, marine animals suffer from warmer and more acidic oceans, and forest species face shrinking habitats. These pressures increase the risk of extinction and weaken biodiversity. Slowing climate change, on the other hand, provides important benefits for endangered species. When environmental changes occur more slowly, species have more time to migrate, adjust their behaviors, or develop new traits that help them survive. Stable climates support healthier food chains, better reproductive success, and safer habitats. A slower rate of change also helps ecosystems remain balanced, which increases the chances of long-term survival for vulnerable plants and animals.

4.Enhancing Global Cooperation for Conservation

Strengthening global cooperation for nature conservation means that countries work together more harmoniously and effectively to protect wildlife and biodiversity. Many species move across borders and need different habitats throughout the year, which is why no country can protect them on its own. Environmental problems such as climate change, pollution, and habitat loss affect many regions at the same time, turning conservation into a global issue.Countries share scientific data and research findings to understand how species are changing in different parts of the world. This shared information makes it easier to see the bigger picture of biodiversity loss. International organizations like UNEP and IUCN also provide important reports that identify which species are most at risk.For migrating animals or marine species, global cooperation is even more important, because these species depend on more than one country throughout their life cycles. When nations communicate and work together, they can better understand how a change in one ecosystem can affect another part of the world. Overall, increasing global cooperation shows that protecting endangered species is not just a local responsibility but a shared duty among all countries.

k. In Situ Approaches

In situ approaches aim to protect endangered species directly in their natural habitats. Animals or plants are not taken to zoos or specialized facilities; instead, they are protected in their natural habitats. This is crucial because many species must survive in environments with the specific conditions of their ecosystems. This approach helps maintain healthy natural environments and support species at risk. Climate change can disrupt habitats

through factors such as increased temperatures, droughts, floods, or diminished food resources. Protecting these areas reduces the negative impacts on species.This method helps species adapt naturally and maintain their roles in the ecosystem. It's also more sustainable in the long term because protecting a habitat means protecting many species simultaneously. Overall, in situ approaches help endangered species survive the challenges of climate change and ensure ecosystems remain stable into the future

i.Protected Areas and Wildlife Reserves

Protected areas and wildlife reserves are places where animals are supposed to be more safe, but it is not always working like that. These areas include parks and reserves where endangered species try to survive in their natural home. But climate change and illegal hunting still happen sometimes because control is not enough. Animals try to eat, move and live normally, but everything is getting harder for them. Protected areas help, but it is still not enough if there is no stronger protection.

I. Ex Situ Approaches

Ex situ approaches when endangered species are taken away from their natural place because they cannot live there safely anymore. They get moved to zoos, aquariums, breeding centers or even seed banks, where experts try to protect them better. This method is used when climate change or humans make the wild too dangerous, so species have almost no chance to survive outside.In these places, animals and plants get more care, food and protection, and sometimes they breed faster because the environment is controlled. But still, it is not the same as real nature and some species don’t adapt so well. Even if they are safe, they cannot always learn natural behaviors, so when people try to put them back into the wild, they have many problems.Ex situ is helpful for stopping extinction, but it also has limits. If the habitat in nature is destroyed or keeps changing from climate issues, then even healthy animals cannot return home easily. So ex situ is good, but it must work together with habitat protection or it will not be enough by itself.

i.Zoos and Botanical Gardens

Zoos and botanical gardens are within the scope of ex situ conservation methods and ensure that animal and plant species that are in danger of extinction in their natural habitats are preserved in conditions close to their real habitat. Species move into these areas when their habitat becomes unsafe due to climate change, fires, habitat loss or other threats. Zoos provide shelter, feeding, and healthcare for endangered animal species. Throughout their lives, the animals' life cycles, behaviors, and biological characteristics are observed and documented for scientific purposes.Botanical gardens, on the other hand, protect threatened plant species for the cultivation, propagation, and long-term preservation of these plants. Plants are protected in special greenhouses, gardens, or seed banks. In these areas, seeds or various plant specimens can be collected and stored for long-term use in times of famine. Botanical gardens are also suitable for scientific studies to study plant growth processes.Both institutions regularly record species' characteristics, living standards, and reproductive potential. These records are used by researchers, conservationists, and

relevant institutions to ensure the best conditions for the animals. Within the scope of ex situ conservation, zoos and botanical gardens are essential institutions used for the preservation, propagation, and scientific study of individuals of threatened species. Species housed in these institutions continue to live in a safe, yet somewhat isolated, environment by creating suitable environmental conditions in which they thrive.

ii. Assisted Migration and Genetic Rescue

Assisted migration is the deliberate human migration of a species from a region where it is no longer viable due to climate change or habitat loss to another region with more suitable environmental conditions. This method is used to create a new habitat for the species. The regions to which the species will be relocated are selected based on criteria such as climate, food resources, and ecological compatibility. Both methods are scientific conservation practices used to ensure the survival of endangered species and aim to reduce their impact on environmental factors. These approaches are used to stabilize species' numbers to a certain extent, increase their long-term sustainability, and maintain their role within the ecosystem. Furthermore, these methods offer alternative solutions for species unable to adapt to the rapidly changing living conditions of climate change. Implementation processes are completed through reporting conducted by expert teams.As a result, some species are struggling to increase their numbers even in protected areas. Factors such as dwindling water resources, changing vegetation, and rising temperatures pose significant challenges, particularly for species that are difficult to adapt. The capabilities of teams operating in these areas may not allow detection of illegal entry or poaching. Without regular monitoring and enforcement in protected areas, species' conditions can deteriorate further. Therefore, for protected areas to be truly effective, stricter monitoring, increased staffing, and increased planning are necessary. These methods will ensure a safer habitat for species and maintain their numbers.

5. Critical Countries’ Views on the Protecting Endangered Species against Climate Change

China

China has set biodiversity and ecosystem protection as a national development goal. The Biodiversity Conservation Strategy and Action Plan (NBSAP), published for global warming, has identified priority areas such as nature conservation, environmental protection, genetic preservation, biodiversity monitoring, and habitat restoration as legal and, over time, cultural goals for the country's future. The plan aims to restore at least a quarter of degraded terrestrial, aerial, and marine ecosystems by 2030, protect at least one-fifth of the land area, and designate endangered ecosystems as legally protected areas through the Ecological Conservation Redlines (ECRL) policy. In recent years, China has enacted numerous laws and regulations related to trade in endangered species, habitat damage, and the protection of biological resources. These laws cover areas such as wildlife protection, biosecurity,

access and sharing of genetic resources, and the protection of aquatic, terrestrial, and air ecosystems. Moreover, over 10,000 areas across the country have been designated for the protection of endangered animals in the last five years. These areas cover a significant portion of China's territory. China is developing both in situ and ex situ conservation systems in conjunction with one another. For example, over 200 botanical gardens, zoos, and wildlife conservation centers have been established in the last 15 years. These facilities have reintroduced many endangered species. Population increases and reintroductions into natural habitats have also been achieved for some species.

Russia

Russia has a comprehensive legal framework for protecting endangered species in the face of climate change. The country has incorporated species protection, habitat restoration, and maintenance of genetic diversity into its legal framework through the 1995 Wildlife Law, which regulates wildlife conservation and sustainable use in addition 1995 Law on Specially Protected Natural Areas defines a vast system of protected areas, including national parks, nature reserves, and botanical gardens, and mandates strict conservation measures within these areas. Russia's Red Data Book officially lists rare and endangered species, establishing national conservation boundaries and providing the basis for scientific monitoring. This framework plays a critical role in protecting sensitive species such as the Siberian tiger, Amur leopard, polar bear, Baikal seal, and saiga antelope. Russia also has various laws governing marine mammals, hunting permits, natural area management, and sustainable use. Internationally, Russia strives to align its laws with these frameworks by becoming a party to agreements on species protection and biodiversity. It emphasizes that the Arctic region is particularly severely affected by climate change, advocating for cooperation on a scientific basis. However, the country tends to balance all these protective laws with economic activities, energy projects, and an Arctic strategy. Therefore, Russia's approach is shaped by both a comprehensive legal system of protection and a search for harmony with national interests.

Italy

Italy is one of the countries most affected by global warming, and therefore, its nature and natural habitats are in danger. Italy has a legal system that takes protecting biodiversity and wildlife very seriously. The state revised its constitution in 2022, and as a result, environmental, biodiversity, and ecosystem protection were included among the state's fundamental duties, ensuring that ecology, nature conservation, and animal rights are protected. Additionally, the National Biodiversity Strategy 2030, agreed upon in 2023, mandated planning for the protection of all natural areas and living creatures in the country and the preservation of their natural ecosystems. This strategy includes measures such as expanding habitats, strengthening the network of protected areas, documenting ecosystems, and expanding nature-based solutions. As a member of the European Union (EU), Italy bears responsibility for the protected species and habitats of its member states under both

the Habitats Directive and the Birds Directive. As a result, the country's territory hosts numerous protected species and habitats of endangered species. Protection is a priority, particularly in sensitive areas such as forests, coastal areas, and Mediterranean habitats.As an example of a protected species, rare and endangered animals, such as the Marsican brown bear, a subspecies found in Italy, receive special protection. These species are supported by both in situ conservation and, where necessary, ex situ measures. As a result, Italy has both protected against the threat of climate change and biodiversity loss and has undertaken efforts to implement these goals through concrete strategies and legislation. However, challenges remain for some species, such as wildlife-human conflicts and habitat fragmentation, making the implementation and monitoring of conservation strategies crucial.

Spain

Spain is taking a comprehensive approach to combating climate change and implementing the energy transition, which also encompasses biodiversity and species protection. The Law on Climate Change and Energy Transition, adopted in 2021, is central to this approach: with this law, Spain aims to reduce greenhouse gas emissions, increase the use of renewable energy, and achieve climate neutrality by 2050. This means a framework that supports the protection of nature, habitats, and biodiversity under climate pressure. In parallel, ecosystem protection, a "green infrastructure" strategy, and protected areas have been integrated into legal regulations and planning processes in Spain. For example, green infrastructure strategies encompass not only habitat protection but also objectives such as climate change adaptation, ecosystem connectivity, water management, and sustainable land use.The Spanish government stated in a report published in 2025 that the country faces a total of over 100 risks from climate change, making environmental protection, species conservation, and ecosystem management a matter of urgent policy importance. However, Spain's biodiversity policy is not only supported by legislation—it is also supported by protected areas, ecological connectivity corridors, adaptation plans, and sustainable rural development policies. The country is developing a culture of compliance with international biodiversity frameworks and establishing both the administrative and technical infrastructure to implement them.

Usa

The United States follows a policy that provides a sustainable world and the protection of endangered species. Therefore, the USA collaborates with UNEP and other international organizations such as IPBES, WHO, and UNFCCC. Through the UNFCCC, the USA works to reduce global emissions and strengthen international climate cooperation, while the Lacey Act combats illegal wildlife trade, and with its 2008 expansion, the act started to include the illegal trade of timber to help prevent global deforestation. The United States developed one of the oldest and most effective acts worldwide, which is called the Lacey Act. The Lacey Act clearly prevents illegal hunting, sales, and trafficking not only of endangered animals but also of plants, and also strongly supports the CITES Convention. The USA also supports the Marine Mammal Protection Act, the National Environmental Policy Act, and the Endangered Species Act, which ensure an essential role in the protection and recovery of the bald eagle,

gray wolf, and California condor. Moreover, the USA accelerated renewable energy investments through the Inflation Reduction Act, implementing the largest climate investment in its history with a 369 billion dollar package. Activities including the capture, trade, and harming of marine mammals have been completely prohibited by the Marine Mammal Protection Act, and new technologies have been mandated to reduce fishing related threats.

Norway

Norway has adopted sustainable and beneficial policies to protect endangered species and ensure the sustainability of the biological balance. Norway is one of the leading countries contributing to and supporting international organizations and UNEP worldwide. As an example, since 1973, Norway has contributed to the Environment Fund and has always been one of the top 15 contributors. Norway's "Biodiversity Action Plan" was adopted by Parliament in 2001 and has played a critical role in the development of Norwegian environmental policy. Under the Paris Agreement, Norway has pledged to reduce its greenhouse gas emissions by 55% by 2030 and is also investing in carbon capture and storage projects such as the Longship project. Norway has allocated substantial financial resources and is investing several hundred million dollars through the Norway International Climate and Forest Initiative (NICFI), aiming to prevent deforestation and preserve critical forest ecosystems in regions such as the Amazon, the Congo Basin, and Indonesia. Norway provides major government incentives for the use of electric vehicles, and with that, Norway has achieved the highest EV adoption rates worldwide. Norway also strongly supports, and as a party to the Ramsar Convention, has designated more than 80 wetlands as Ramsar sites. Additionally, Norway provides regular contributions to the Global Environment Facility (GEF) to biodiversity and environmental organizations.

United Kingdom

The United Kingdom implements a comprehensive environmental policy to combat climate change and protect endangered species. The foundation of this policy was established through the Environment Act 2021, which introduced legally binding targets for nature conservation and biodiversity enhancement. Local authorities were also given responsibilities to improve and protect natural areas. Within this framework, the Nature Recovery Network was created to connect conservation areas across the country, strengthen habitats, and make ecosystems more resilient to the impacts of climate change. The government's main roadmap, the Environmental Improvement Plan 2025, aims to protect 30% of land and marine areas by 2030. It also sets goals to halt biodiversity loss by 2042 and restore ecosystems through the rehabilitation of forests, peatlands, and wetlands. These habitats are prioritized not only because they support endangered species but also due to their high capacity for carbon storage, making them essential in the fight against climate change. The UK also runs the Species Recovery Programme, which focuses on reintroducing or increasing populations of species that have declined or disappeared. In marine environments, the number of protected areas is being expanded, along with efforts to improve conditions for aquatic species. Internationally, the United Kingdom contributes to global biodiversity goals by providing financial support to conservation projects in various countries. Despite these strengths, the UK faces challenges such as funding limitations, varying local government capacity, and balancing environmental protection with economic

development. However, overall, the country's policy is built on a modern and comprehensive approach that integrates climate action with species conservation.

Germany

Germany's biodiversity policy is closely integrated with its climate change mitigation strategy, as outlined in the National Biodiversity Strategy 2030 (NBS 2030), which seeks to strengthen ecosystem resilience and halt species loss by prioritizing climate-regulating habitats such as forests, peatlands, wetlands, and agricultural landscapes. Through its Action Plan for Nature-Based Solutions, Germany invests in restoring carbon-rich ecosystems—rehabilitating peatlands, diversifying climate-stressed forests, and revitalizing river floodplains—to both protect endangered species and enhance natural carbon sinks. Complementing these efforts, the National Strategy for Genetic Resources focuses on preserving climate-resilient species and varieties in agriculture, forestry, and fisheries to reduce ecological vulnerability under changing climate conditions. Internationally, Germany provides financial support for conservation and climate adaptation projects in developing countries, reinforcing its role in global biodiversity governance. Overall, Germany employs a science-based, ecosystem-centered approach that views climate change as both a significant threat and a driver for ecological restoration, though challenges such as intensive agriculture, urban expansion, and ongoing ecosystem degradation continue to impede full implementation.

6.Keywords and Key Definitions

Biodiversity Loss: A decrease in the number of species and biological communities in a given area, as well as a reduction in genetic diversity and variety.

Habitat Degradation: *Habitat loss is the process of a natural habitat losing its function to the extent that it no longer supports the species living within it.*

In Situ Conservation: *Protecting species inside the ecosystems where they naturally live. This term includes creating national parks, wildlife reserves and managing habitats so species can keep interacting in their natural areas. It focuses on keeping the system healthy as the original habitat.*

Ex Situ Conservation: The conservation of species outside their original habitats often used when species are critically endangered. This method includes zoos, seed banks and botanical gardens. These programs help reserve genetic diversity and support future reintroduction efforts.

Climate Adaptation: Changing our behaviors, systems and in some cases our lifestyles to protect our families, economies and the environment we live in from the effects of climate change.

Protected Areas: Clearly defined geographical area that is recognized, set aside and managed through legal or other effective means to ensure the long-term conservation of nature, along with associated ecosystem services and cultural values.

Species Migration: The seasonal migration of animals from one habitat to another in search of food, breeding grounds, or more suitable environmental conditions.

Ecosystem Restoration: Actions aimed at healing damaged environments, such as reforestation, rebuilding wetlands, or improving degraded soils. Restoration helps ecosystems regain their natural functions and strengthens resilience against future environmental stress.

Illegal Wildlife Trade: The trafficking or selling wild animals, plants or their products in violation of national or international laws. This activity drives many species toward extinction and fuels organized environmental crime.

Nature-Based Solutions: Approaches that use natural systems like forests, rivers, and wetlands to address environmental problems. These solutions help reduce climate impacts while supporting biodiversity and local communities.

Environmental Policy: Rules, laws and international agreements that guide how governments and organizations protect natural resources, reduce pollution and support conservation initiatives worldwide.

7.Topics a Resolution Should Address

1.How can protected areas be expanded or improved to be more climate-resilient?

2.What mechanisms can strengthen international cooperation for species protection?

3.What mitigation and adaptation strategies can strengthen ecosystems against climate impacts?

4.How can migration corridors and disrupted habitats be restored or safeguarded?

5.What regulations are needed to reduce harmful human activities such as deforestation, illegal wildlife trade and pollution?

6.How can vulnerable species be identified more accurately in regions most affected by climate change?

7.How can climate induced human wildlife conflicts be minimized?

8.What restoration projects can help rebuild degraded ecosystems that support endangered species?

9.What role can regional organizations play in coordinating species protection?

10.How can overexploitation of natural resources be reduced to protect vulnerable habitats?

11.How can technology be developed and used more effectively in protection of endangered species?

12.What role should developed countries play in protection of endangered species?

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