

IFMSA Policy Document

Biodiversity Loss

Proposed by Team of Officials

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Policy Commission

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Policy Statement

Introduction:

Biodiversity loss is a critical pillar of the triple planetary crisis, in addition to species extinction and public health issues of major concern and is majorly driven by human activities. Biodiversity loss has negative impacts on ecosystems, human health, wildlife conservation, food systems, access to clean water and sanitation and the sources of livelihood of indigenous people. The rate of Biodiversity loss has been on an increase for over five decades with a significant increase in the number of endangered species.

IFMSA position:

The International Federation of Medical Students' Associations (IFMSA) acknowledges that Biodiversity loss is a major threat to human, animal and environmental health. IFMSA recognizes the efforts made thus far by governments, non-governmental organizations, stakeholders and international organizations in promoting Biodiversity conservation and ecosystem restoration. IFMSA condemns all man-made activities that drive Biodiversity loss and encourage the displacement of habitats, outbreak of zoonotic diseases and forced migration; and strongly believes that medical students and youths have a huge role to play in Biodiversity preservation and sustainable development with the needed support and holistic curriculum development.

Call to Action:

Therefore, the IFMSA calls on:

Governments to:

- Adopt sustainable policies that seek to preserve biodiversity through its inclusion in all policies.
- Expand and maintain green spaces in the context of nature conservation to contribute to the social well-being of their inhabitants.
- Launch national awareness campaigns and programs to mobilize collective efforts towards the conservation of biodiversity.
- Ensure the representation of vulnerable groups and indigenous people in decision-making processes concerning biodiversity preservation and environmental policies.
- Introduce stringent legislation against biodiversity loss activities, such as illegal wildlife trafficking, deforestation, and other human biodiversity threats.
- Establish laws protecting endangered species and ecosystems from harmful human activities such as illegal logging, mining, and wildlife trafficking.

Relevant UN agencies to:

- Provide technical and financial assistance to international, regional and national policies that protect biodiversity and monitor their implementation, trends and statistics effectively at national, regional and international levels.
- Establish and sustain global platforms for sharing best practices, support, resources, and technologies related to biodiversity preservation.

Private sectors to:

- Evaluate and modify their operations to minimize the impact on biodiversity, incorporating sustainable sourcing, waste reduction, and carbon footprint reduction.
- Invest in research and developmental initiatives for green technologies, environmentally friendly business practices and sustainable use of resources.
- Implement employee engagement programs centered on biodiversity conservation, such as tree

planting events and wildlife conservation workshops.

- Publish annual environmental impact reports that include detailed assessments of the company's impact on biodiversity.

Non-Governmental Organizations to:

- Collaborate with governmental bodies and with each other to develop cross-sectoral approaches that sustain efforts towards the preservation of wildlife and biodiversity.
- Support indigenous advocacy for demarcation, increasing societal awareness about indigenous territories' importance in biodiversity preservation.
- Facilitate capacity-building programs, particularly community awareness based programs for communities and groups directly involved in biodiversity preservation.
- Create platforms for knowledge exchange and collaboration on biodiversity conservation strategies.

Healthcare facilities to:

- Educate and train healthcare workers on biodiversity loss and its relevance to health.
- Develop and implement sustainability strategies within their operational and administrative processes, by increasing their green spaces, research on Biodiversity loss and Health, waste management, energy efficiency recycling and use of sustainable materials to minimize the environmental footprints from biodiversity loss.
- Foster partnerships with local communities, NGOs, and government agencies to work on community-based conservation initiatives.

Universities and Educational Institutions to:

- Integrate biodiversity loss in their curricula to educate future professionals.
- Establish partnerships with local communities, non-governmental organizations, and government agencies for collaborative research and practical learning experiences in biodiversity conservation.
- Create awareness on the importance of biodiversity and its role in sustainable development, and offer resources and mentorship to support student-led initiatives focused on biodiversity preservation and environmental sustainability.
- Implement sustainable practices within institutions, such as energy-efficient buildings, sustainable procurement policies, and comprehensive recycling programs.
- Incorporate traditional ecological knowledge into medical education and practices where applicable, recognizing the wisdom of indigenous cultures in preserving biodiversity and health.
- Encourage ethical research practices that respect biodiversity and indigenous rights in medical research, particularly in areas rich in biodiversity.

IFMSA NMOs and Medical Students to:

- Organize and participate in programs and activities that promote green solutions, biodiversity preservation, wildlife conservation and discourage environmental racism.
- Facilitate interdisciplinary collaboration and dialogue on the intersection of health, biodiversity, and social justice, promoting a holistic understanding of these issues.
- Advocate for policies and the inclusion of environmental sustainability measures that support biodiversity conservation at institutional, national, and international levels.
- Create platforms for sharing best practices and successful initiatives related to biodiversity conservation within the medical community.
- Foster partnerships with other sectors such as the public health, environmental, and education sectors to achieve more comprehensive and effective biodiversity conservation outcomes.

Position Paper

Background information:

Article 2 of the Convention on Biological Diversity defines Biodiversity as the variability among living organisms from all sources, including diversity within species, between species and of ecosystems. Biodiversity includes the specific genetic traits and variations of millions of diverse species and various ecosystem types, habitats, landscapes and continents in which humans live and depend on to survive. [1] Biodiversity loss involves all activities that threaten the biological diversity of species and ecosystems, including land-use changes, displacement of species and habitats, climate change, pollution, and over-exploitation of natural resources. The developmental knowledge of Biodiversity public awareness surrounding Biodiversity loss improved after the United Nations declared 2010 as the International Year of Biodiversity. However, there have not been any remarkable changes towards Biodiversity preservation and wildlife conservation in the most affected parts of the world at higher risks of biodiversity depletion and extinction of some wildlife and plant species. [2] The WWF's Living Planet 2022 Report estimated a decline in the population of wildlife over the past five decades by 69% due to habitat displacement, and estimated climate change as a bigger driver of Biodiversity loss in forthcoming years, if not adequately controlled. The Living Planet Index also assessed the percentage rate of Biodiversity loss across several regions since 1970 - Latin America and the Caribbean topped the list with the highest percentage biodiversity loss rate of 94%, Africa - 65%, Asia-Pacific - 45%, North America - 33%, Europe and Central Asia - 24%. [3] The International Union for Conservation of Nature (IUCN) highlighted cycads and coral plant species at the highest risk of fast decline and depletion under the Red List of Threatened Species. [4]

In 2019, the Global Assessment Report on Biodiversity and Ecosystem Services unveiled by the International Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) at the United Nations Educational, Scientific and Cultural Organization (UNESCO) identified Climate Change, Land-use changes - particularly urbanization, invasive species, pollution and over-exploitation of land, water, mineral, metals - and other natural resources, as the major drivers of Biodiversity loss globally. The Global Report also reported that 75% of terrestrial ecosystems are suffering severe degradation. Today, a full 75% of the terrestrial environment, 40% of the marine environment, and 50% of streams manifest severe impacts of degradation. [5] The 2021 UN report stated that about a million biological diverse plant and animal species are at risk of extinction due to biodiversity crisis. [6]. The most vulnerable population that suffer most from the negative impacts of Biodiversity loss are indigenous individuals that depend on nature for their daily activities, source of food, water and livelihood. The World Bank estimated that over 600 million jobs are under anthropogenic activities that may encourage Biodiversity loss. Not having a sustainable plan to protect the sources of livelihood of indigenous individuals, while regulating controllable activities that encourage Biodiversity loss may negatively affect the economic growth of the country. Low-income countries are most prone to suffer from economic damage of about 10% decline in the annual GDP due to Biodiversity loss with Sub-Saharan Africa bearing a predicted annual decline of 9.7% and Asia - 6.5%. The World Bank estimated that about 80% of the global population that live below the poverty line, live in rural areas; and poverty rate levels will increase, particularly in Latin America, Sub-Saharan Africa and Asia, if there is an economic downfall and loss of source of livelihood resulting from Biodiversity loss. [7]

Biodiversity preservation is an integral component of the Sustainable Development Goals (SDGs) that promotes environmental health and conservation of wildlife and natural resources. Responsible production and consumption of food, healthier and more sustainable dietary choices and protection of lives on land and underwater are some of the biodiversity conservation measures under the Sustainable Development Goals (SDGs). [8]

Biodiversity has a great impact on human health. According to a state of knowledge report jointly published by the Convention on Biological Diversity (CBD) and the World Health Organization (WHO), biodiversity loss has been occurring at unforeseen levels and has impacted human health globally. The impact of biodiversity on human health can be seen from the perspective of nutrition, traditional medicines, climate health and infectious diseases outbreak. [9]

In addition to food, nutrition and health, biodiversity loss has impacted on indigenous individuals and have contributed to the forced displacement and migration of millions of people over the decades impacting on their habitat and source of livelihood. Community based adaptation strategies, mitigation, adaptation and resilience measures are recommended to ameliorate the negative impacts of biodiversity loss on indigenous people, communities, health and the environment [10]

Discussion:

1. Interlinkage with the Triple Planetary Crisis

The "Triple Planetary Crisis" characterizes the three profound global crises our world confronts today: climate change, biodiversity loss, and pollution. These crises are intimately interconnected and are exacerbated by systemic drivers such as unsustainable economic models, population growth, and sociopolitical factors [11].

Climate change, primarily driven by human activities, significantly contributes to biodiversity loss. Studies estimate that if current rates of global warming persist, around 16% of species could become extinct, marking a loss of biodiversity unparalleled in human history [12]. Furthermore, ocean acidification disrupts marine organisms' life cycles, endangering a third of reef-building corals worldwide [13]. Extreme weather events, another consequence of climate change, are causing substantial ecosystem disruptions. For instance, the 2019-20 Australian bushfires led to the death or displacement of nearly three billion animals [14].

Biodiversity loss, in turn, accelerates climate change. For example, the destruction of carbon-sequestering ecosystems, such as forests and peatlands, releases significant amounts of greenhouse gases. Deforestation alone accounts for 10% of global CO₂ emissions [15], while peatland disturbances contribute to approximately 5% of global anthropogenic CO₂ emissions annually [16].

Pollution further compounds these crises. Anthropogenic pollutants, such as plastics and heavy metals, contaminate habitats and harm wildlife [17]. Notably, air pollution in the form of nitrogen deposits has been linked to a decrease in plant diversity [18].

These crises do not affect all regions and communities equally. Lower-income countries, despite contributing the least to climate change, often bear the brunt of its impacts. Biodiversity loss also disproportionately impacts communities reliant on natural resources for their livelihoods, threatening food security and exacerbating socio-economic disparities [19].

Addressing these interconnected crises necessitates a multifaceted and inclusive approach. Policies should promote sustainable land management and endorse a rapid transition to renewable energy, coupled with stringent emissions reduction targets. Legal protections for indigenous lands and the rights of traditional communities should be enforced, recognizing their crucial role in preserving biodiversity [20].

2. Determinants and Causes of Biodiversity Loss

Biodiversity loss is driven by these main factors: pollution, habitat loss, hunting, introduction of invasive species, overexploitation of preferred species, climate change and natural disasters. [21] Changes in land and sea use have been identified as the main driver for global biodiversity loss over the last decades. Considering that the motives behind them are mainly for human benefit, this shows that urgent action must be taken to conserve the biological variability of our planet. Climate change is also the most rapidly increasing threat facing biodiversity, which puts the planet in a critical situation with alarming factors tackling diversity of life all around the globe. [22]

Humans have modified ecosystems in all shapes and forms for their developmental expansion, resulting in the loss of an estimated 4-20 trillion USD from the years 1997-2011. The protection of our ecosystems needs to start now, with the implementation of restoration projects, limitation of destructive behaviors and integration of multidimensional approaches that seek to conserve them. [23].

3. Relevance of Biodiversity Loss

3.1 Impact on Human Health

Communities around the world are dependent on biodiversity in their daily lives, whether it is through providing them with nutritious resources or through means to make their livelihood, therefore the loss of it is detrimental to human lives. [24] The effects on human health could be felt directly and indirectly, which puts the loss of biological variability as one of the main threats to global health. [9]

Due to human behaviors in the wipeout of natural habitats, wild animals find themselves in the need to shift closer to live next to human beings. This augments the risk of transmission of zoonotic diseases, [25] as we have recently seen in the COVID-19 pandemic. Studies have also shown higher rates of spread of malaria, schistosomiasis, Lyme disease, hantavirus and West Nile virus in areas of noticeable variability in biodiversity. [26]

It is a serious threat to the pharmaceutical needs of mankind, as notable medicines such as Aspirin, Digoxin and Morphine are derived from organic resources. [27] This could also hinder the development of new drugs, as natural compounds derived from plant products play a critical role in supporting human health. Medicinal plants have always been a staple in the treatment of many diseases; hence the threat of their extinction poses a significant threat to health.

At first glance, biodiversity loss and mental health may seem distinct, but they are closely related. Human interaction with nature has been linked with lower levels of anxiety, depression and stress. [28] Biodiversity loss has the potential to seriously affect human mental health, as our interaction with nature is critical for our wellbeing. [29] This shows that the protection of ecosystems and nature can prove to be beneficial for the social well-being of humans, contributing positively to it.

3.2 Impact on Animal Health

The animal health's outcomes caused by the loss of biodiversity are relevant, multiple and diverse. For instance, biodiversity loss can increase the susceptibility of animal populations to diseases with higher prevalence and transmission rates, as diverse ecosystems tend to have a greater variety of disease hosts and natural enemies. [30]

Biodiversity loss can also result in the decline or extinction of keystone species, which play crucial roles in maintaining ecosystem balance and functioning. For example, the decline of sea otters due to overhunting

led to an increase in sea urchin populations, resulting in the overgrazing of kelp forests and subsequent loss of biodiversity. [31] Additionally, a study conducted by Ulyshen et al. (2023) highlighted that any effort to preserve native woody habitats, including the protection of individual trees, will benefit pollinating insects and help maintain the critical services they provide. [32]

Furthermore, biodiversity loss reduces genetic diversity within animal populations, limiting their ability to adapt to changing environments and increasing the risk of population decline and extinction. Reduced genetic diversity due to small population sizes increases the risk of inbreeding depression, decreased reproductive fitness, and compromised immune responses in animal populations. [33]

Lastly, biodiversity loss through habitat destruction and fragmentation can directly impact animal health. A study by Laurance et al. (2012) demonstrated that habitat fragmentation increased animal stress levels, reduced reproductive success, and elevated the risk of disease transmission. [34]

All these outcomes contribute to the fact that current extinction rates are 1,000 times higher than natural background rates of extinction and future rates are likely to be 10,000 times higher. [35]

3.3 Impact on Environmental Health

Biodiversity loss has a considerable impact on environmental health at many levels. From an ecosystem perspective, greater biodiversity enhances productivity, nutrient cycling, and overall stability. This increased diversity strengthens ecosystems, rendering them more resilient to disturbances and more capable of recovering from environmental changes. [36]

Additionally, biodiversity plays an important role in regulating the global climate system, including carbon storage, precipitation patterns, and temperature regulation. [37] Thus, halting biodiversity contributes to climate change and environmental instability by reducing the capacity of ecosystems to sequester carbon, disrupting carbon cycling, and amplifying the impacts of climate change, leading to further environmental degradation. [38] On the other hand, improved biodiversity promotes carbon sequestration and helps regulate climate by enhancing ecosystem productivity and reducing greenhouse gas emissions. [36, 39]

Moreover, biodiversity loss disrupts nutrient cycling and compromises soil health. Multiple studies have found that reduced plant diversity altered soil microbial communities, leading to decreased nutrient availability and cycling efficiency, and diminished soil fertility, ultimately affecting the ecosystem functioning and productivity. [39, 40] In addition, microbial communities play a significant role in various other soil health-related processes, such as decomposition and nutrient mineralization, which are imperative for preserving soil fertility and promoting overall environmental well-being. [41]

Furthermore, different authors such as J. David Allan and C.J. Vörösmarty have demonstrated that the loss of biodiversity can compromise water quality and purification processes, whereas more biodiversity promotes water filtration, reduces nutrient runoff, and helps maintain the quality and availability of freshwater resources. [42] as well as contribute to clean drinking water sources. [43]

4. Relevance to Public Health

Biodiversity loss has a significant impact in multiple aspects, including the 3 spheres of the One Health approach: animal, environmental, and human health. Thus, it's a topic of extreme importance for the present, and future of public health. For example, higher exposure to environmental hazards, such as air pollution, water contamination, and other toxic substances are directly related with biodiversity loss. [37] While diverse ecosystems provide natural services that help regulate and purify air and water, the loss of biodiversity can result in degraded environmental quality, leading to a higher burden of non-communicable

diseases such as allergies [44], asthma and chronic obstructive pulmonary disease (COPD) [45]

Access to green spaces, parks, and natural areas has been associated with improved psychological well-being, stress reduction, and enhanced resilience [46], as well as exercise and physical activities. The loss of biodiversity and green spaces can deprive individuals of these therapeutic benefits, potentially impacting mental health and increasing the risk of non-communicable diseases such as obesity, cardiovascular diseases, and diabetes. [47]

Biodiversity loss has repercussions on dietary diversity and the availability of nutritious foods. Diverse ecosystems offer a wide array of plant and animal species that contribute to wholesome and well-balanced diets. However, the decline in biodiversity can result in reduced agricultural diversity, restricting the accessibility of nourishing foods and heightening the risk of non-communicable diseases associated with inadequate dietary quality. [48]

To conclude, from a health systems perspective, the decline in biodiversity can exert pressures on healthcare systems, affecting human health outcomes and healthcare delivery. Further than the disease burden and healthcare costs, or the pharmaceutical dependency already exposed above, it is crucial to analyze the impact it has on health inequalities. Underrepresented communities, such as those reliant on natural resources for their livelihoods, may experience disproportionate health impacts due to biodiversity loss along with limited access to healthcare services and reduced availability of traditional medicinal resources, widening health disparities and contributing to inequities in health outcomes.[49]

5. Vulnerable groups to Biodiversity Loss

In "Ideas to Postpone The End of the World," Ailton Krenak, an indigenous person from Brazil, describes the cosmivision of the Krenak indigenous people regarding Nature. The author discusses the Doce River in Minas Gerais, Brazil, following the Mariana mining disaster. Ailton explains that the *Watu* River (the indigenous name for the Doce River) is seen as a family member, "like a grandfather," to his people, rather than merely a natural resource [50]. This perspective is similar to that of the Yanomami people, as described by Davi Kopenawa: "In the forest, we human beings are the 'ecology.' But it is equally the *xapiri*, the animals, the trees, the rivers, the fish, the sky, the rain, the wind, and the sun! It is everything that came into being in the forest, far from the white people: everything that isn't yet surrounded by fences. The words of 'ecology' are our ancient words, those *Omama* gave our ancestors at the beginning of time" [51].

These two examples of indigenous cosmivision about Nature demonstrate that deforestation and the destruction of biodiversity are impacting indigenous people not only in terms of health but also their customs, culture, and religion. Ailton Krenak also writes that when we perceive Nature solely as a resource, giving only humans the attributes that we consider human, that is, deserving of respect and understanding, we can end up destroying it in the name of progress, that is why he writes "Nature" with a capital "N," to explicitly that it is subject of rights. [52]. The consequences of this are referred to as environmental racism, which affects not only indigenous people but also black people, quilombola, and river communities.

Environmental racism is a concept coined by Benjamin Franklin Chavis that describes the unequal way in which some groups of people suffer the consequences of environmental phenomena. However, it is not just about that; it also highlights how these socially oppressed groups are marginalized from the decision-making process. [52] This is expressed in how frequently these groups are "located next to pollution sources such as major roadways, toxic waste sites, landfills, and chemical plants" [53], and also in how the destruction of Nature and biodiversity disrespect their connection with natural entities, such as The Rivers, The Mountains, and The Animals, as Krenak explains that traditional communities cannot conceive of

themselves without their connection to Nature [50].

Additionally, environmental racism can be analyzed in how biodiversity loss has significant implications for the ethnopharmacology of indigenous knowledge and the preservation of Indigenous Traditional Medicine to traditional and indigenous people, leading to the extinction of plants that are important for the preservation of their health [54].

Another aspect of environmental racism involves Climate refugees, which are "people who are forced to temporarily or permanently leave the traditional area in which they live due to the visible decline of the environment, which is adversely affecting their quality of life to such an extent that their subsistence is endangered" [55]. According to World Economic Forum, the number of people living in coastal areas at high risk of rising sea levels in 2021 is 260 million [56], leading us to discuss the possibility of the disappearance of island nations, for example, and how it would render their inhabitants stateless, not only harming their ties with their land but also taking away their nationalities.

6. Global Efforts on Biodiversity Loss

In terms of rescuing aspects of indigenous cosmology about nature, there is the concept of "*Buen Vivir*" ("*Sumak kawsay*" in Kichwa, "*Suma qamaña*" in Aymara, or "*Ñandereko*" in Guarani), which encompasses an epistemological view of the individual that is symmetrical with oneself, with society, with the planet, and with all beings [57]. It aims to rebuild the society-Nature relationship, reestablishing the connection with *Pachamama* and replacing the mindset of unlimited resource accumulation [58].

From this perspective, the Equatorian Constitution of 2008, based on *Buen Vivir*, includes Nature as a subject of rights, ensuring its right to the maintenance of its life cycles and its restoration [59]. Also, the Equatorian "Plan Nacional para el *Buen Vivir* 2017-2021" included the guarantee of Nature rights to actual and future generations, incentivizing to rethink the notion of progress and growth to a "more human, fair and equitable approach" and to recognize the intrinsic values of Nature, proposing a transition on their economy towards bioeconomy. [60]

Another experience on the affirmation of Nature rights is the historical fight of the Maori people for the *Te Awa Tupue* River. Their fight for the preservation of the river began when the New Zealand government intervened in the region with infrastructure projects, tourism activities, and hydroelectric construction, which led to the degradation of the river and its riparian forests. However, after a judicial decision that became law in 2017, the river was recognized as a living entity and should be protected to ensure the continuity of its existence, under the *Te Awa Tupua* Act. [61]

Furthermore, the "Movimento Atingidos por Barragens-MAB" (Movement of Dam Affected People), a Brazilian social movement, began to take shape around the 1970s in the region of the Uruguai River Valley, stemming from the fight of farming families against the installation of a hydroelectric power station. [62] In the following decade, this movement expanded to other regions of the country, uniting the struggle for compensation for the material losses of the population living around dam construction areas and for the impacts on the reproduction of their cultures, their ways of life, and the environment. This culminated in the MAB's participation in the construction of the International Rivers Network, involvement in the Advisory Forum of the World Commission on Dams, the Committee on Dams, Rivers and People, and the coordination of the International Day of Action for Rivers and Against Dams. [63]

In addition, there exists the Convention on Biological Diversity, which is the international legal instrument for "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources" that has been adopted

by 196 nations. The overall objective of the convention is to encourage actions, which will lead to a sustainable future. Arising from the belief that the conservation of biodiversity is a common concern of humankind, the convention covers biodiversity at all levels: ecosystems, species and genetic resources. It also covers biotechnology, including through the Cartagena Protocol on Biosafety. Overall, it covers all domains that are both directly or indirectly related to biodiversity and its role in contributing to development, ranging from science, politics and education to agriculture, business, culture and more. [64]

In the latest Conference of Parties on Biodiversity (COP15), the Kunming-Montreal Global Biodiversity Framework (GBF) has been adopted, aiming to tackle biodiversity loss, restore ecosystems and protect indigenous rights. The plan includes specific measures to stop and reverse nature loss, including putting 30% of the planet and 30% of degraded ecosystems under protection by 2030. [65]

7. Role of youths and medical students in Biodiversity Preservation

For our planet to have a sustainable and diverse future, young people and medical students must play an important role in biodiversity preservation [64]. Young people have a special opportunity to support biodiversity conservation and advance sustainable practices as environmental advocates. They can have a big impact by actively promoting policy changes, implementing conservation initiatives, and raising awareness [66].

In order to address the biodiversity crisis, youth involvement is crucial. Young people make up more than 50% of the world's population, according to the UN, making their participation essential for reaching the goals for global biodiversity. In particular, medical students have a distinctive viewpoint and scientific expertise that can be used to motivate action and promote constructive change [67].

Educating people about the value of biodiversity and how it relates to human health and well-being is one of the main roles of young people and medical students. They can educate their coworkers, communities, and policymakers about the importance of biodiversity and the effects of its loss by planning educational campaigns, workshops, and outreach programmes. These initiatives may promote sustainable practices and a sense of environmental responsibility [66].

The development and implementation of biodiversity conservation strategies can be helped by young people and medical students. They can also advocate for changes in policy. Engaging local, national, and international decision-makers will allow them to emphasize the necessity of more stringent environmental laws, protected areas, and sustainable land use techniques. They participate in policy forums and engage in lobbying through speeches, public speaking, which can amplify their voices and influence policy agendas. [65]

Furthermore, active participation in biodiversity conservation projects and initiatives is crucial [66]. Youths and medical students can engage in activities such as habitat restoration, reforestation, and citizen science projects that contribute to data collection and monitoring of biodiversity. [67]

The engagement of youths and medical students in biodiversity preservation aligns with the global sustainable development agenda. The United Nations' Sustainable Development Goals (SDGs), particularly Goal 15: Life on Land, emphasize the need to protect, restore, and sustainably manage terrestrial ecosystems [68]. By actively supporting and contributing to SDG 15, young people can contribute to the broader goal of sustainable development.

To further strengthen the role of youths and medical students in biodiversity preservation, collaboration and partnerships with relevant stakeholders are crucial. Engaging with local communities, NGOs,

academic institutions, and governmental organizations can enhance the impact of their initiatives and promote knowledge exchange. [66].

In conclusion, the active involvement of youths and medical students in biodiversity preservation is vital for achieving sustainable development and ensuring the long-term health of our planet [67].

8. Biodiversity Loss in the Medical Curriculum

As future healthcare workers, medical students have an essential role to play in all factors affecting human health. Education about the potential hazards they will face when they graduate, can prove to be massive in aiding them in limiting their hazardous effects. In a study conducted by the IFMSA, climate change was found to be taught in only 15% of medical schools worldwide. [69] As one of the main drivers of biodiversity loss, this shows a clear lack of education about environmental topics and their effect on human health.

This needs to be corrected through holistic curricula that integrate these topics while educating students on the potential health outcomes and how to actively contribute to solving them. The lack of education on the advantages of nature preservation limits the capabilities of future doctors and the sustainability of the healthcare they can provide. [70]

9. Biodiversity Preservation for Post-Pandemic Recovery

Despite some claims on the positive impact of the pandemic on Biodiversity preservation such as reducing the level of greenhouse gas emissions, air and marine pollution decline due to restricted movements and activities, and reduction in the rate of wildlife poaching, there has been a greater percentage of the negative impact of the pandemic, particularly in vulnerable regions. The negative impacts of the pandemic include but are not limited to anthropogenic activities that encourage biodiversity loss, local over-exploitation of wildlife and natural resources, zoonotic diseases outbreak, loss of skilled biodiversity preservation manpower and economic decline in many nations, which has hugely affected the amount of national resources annually allocated for ecosystem and biodiversity preservation. [71]

A survey carried out by the International Union for Conservation of Nature (IUCN) in March 2021 analyzed the impact of the COVID-19 pandemic on Biodiversity Preservation. From the survey results, Africa and Asia were majorly affected, and biodiversity conservation measures drastically decreased as a consequence of the pandemic. [72] Greener and Nature-based post pandemic recovery implementation efforts by governments, including investing a minimum of 10% of the global recovery funds in nature to tackle climate and biodiversity related crises was recommended at the IUCN World Conservation Congress in September 2021. [73] In addition, the United Nations Conference on Trade and Development (UNCTAD) encouraged countries during BioTrade Congress to employ biodiversity friendly and environmental actions to preserve biodiversity for post-Pandemic recovery, in line with the objectives of the Convention on Biological Diversity (CBD) and Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). [74]

While it is evident that pandemics have a huge impact on biodiversity and wildfire, biodiversity preservation and regulated wildfire trade can help prevent future pandemics, as there is a strong linkage between Biodiversity, Wildfire and Health. Examples can be seen in zoonotic diseases outbreak and occupational disease outbreak from anthropogenic activities relating to biodiversity loss. [75]

Several efforts by international organizations have been put in place to preserve biodiversity for post-pandemic recovery. A great example is the European Green Deal proposal adopted by the European Union Commission as its Biodiversity 2030 Strategy for Biodiversity Post-Pandemic recovery for its member states by 2030. The EU Biodiversity 2030 Strategy also addressed risk management plans

against future threats to wildlife and environment. [76]

In March 2022, the United Nations Environment Assembly adopted resolutions to focus on the protection of wildlife, biodiversity and health, ecosystem restoration, mitigation and adaptation from climate change, reduction and putting an end to pollution, creation of job opportunities, poverty reduction and efficient production and consumption of resources including food, minerals and metals as part of the 14 resolutions by UN member states to end pollution and preserve biodiversity for post pandemic recovery. [77]

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