FROM COMMON HERITAGE TO FRAGMENTED GOVERNANCE: AN ANALYSIS OF GLOBAL COMMONS TREATIES AND THEIR HUMAN RIGHTS IMPLICATIONS

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ABSTRACT

Global commons are areas beyond national jurisdiction such as the high seas, atmosphere, Antarctica, and outer space, which are shared by all states and peoples.[1] The way that global commons are run is a problem for international law. This is because these resources are available to everyone. Nobody actually owns them. This means that global commons are often used much and get damaged, which is known as the tragedy of the commons.

Even though international laws have been created to manage these resources there are still some gaps in the way they are run. These gaps stop laws from being effective in dealing with global commons issues. If we do not fix these gaps the way that global commons are run could make environmental problems worse. Increase inequality around the world.

This paper wants to look at how international treaties work in managing global commons and meeting human needs. It will use an analysis of the law and a critical look, at major environmental laws to see how well they work in managing global commons.

The paper will look at commons and see how international environmental law and treaty governance affect human rights and sustainable development.

Keywords: commons, international environmental law, treaty governance, human rights, sustainable development.

[1] 'Global Commons: Understanding Exploitation and Conservation' (Drishti IAS, 24 May 2024) https://www.drishtiias.com/blog/global-commons%3A-understanding-exploitation-and-conservation accessed 15 March 2026.

I. Introduction

Global commons are areas that are not controlled by any country and are used by all countries. These areas include the oceans, the air, Antarctica and outer space. International law says that these areas cannot be owned by any country and must be managed together.[2]

The management of these areas is very important because they support systems that're critical for human life and development.[3] The oceans help regulate the climate and provide food the air keeps the environment stable and outer space is used for communication and navigation..[4]

However because no country owns these areas it is hard to manage them. They are open to all countries. There is no central authority to control them. This can lead to overuse and damage to the environment. This problem is often called the "tragedy of the commons " where countries use these areas for their benefit but collectively damage them.[5]

To solve this problem international law has developed agreements and institutions to manage these areas and promote management. Despite these efforts there are still concerns about how these agreements work and whether they protect the interests of all people.

II. Conceptual Foundations of Global Commons in International Law

2.1 Origins of the Commons Concept in Classical Legal Thought

The idea of commons started with early legal doctrines based on Roman law and natural law theory. One of the ideas was the concept of "*res communis*," which referred to things that could not be owned by anyone and belonged to all people. Roman law said that things like air, water and the sea were "common to mankind" by nature.

This idea showed that some natural resources are essential for all people and cannot be owned

[2] Jennifer Harper, 'Global Commons: Definitions, Concepts and Perspectives – Towards a Taxonomy' (Futures4Europe, 11 May 2023) https://www.futures4europe.eu/post/global-commons-definitions-concepts-and-perspectives-towards-a-taxonomy-pwjil accessed 15 March 2026.
[3] Kristi Govella and others, 'Governing the Global Commons: Challenges and Opportunities for US–Japan Cooperation' (The German Marshall Fund of the United States, 19 December 2022) https://www.gmfus.org/news/governing-global-commons-
[4] 'Global Commons' (Sustainability Directory) https://climate.sustainability-directory.com/area/global-commons/ accessed 15 March 2026.
[5] Olivia Lai, 'What Is the Tragedy of the Commons?' (Earth.Org, 5 September 2021) https://earth.org/what-is-tragedy-of-the-commons/ accessed 15 March 2026.

by anyone. This idea later influenced law, where it became a principle for managing areas that are not controlled by any country. The idea developed from law to international law through natural law philosophy in the early modern period.

2.2 Grotius and the Doctrine of the Freedom of the Seas

A major development in the management of global commons was the idea of Hugo Grotius, who said that the oceans could not be owned by any country and must be open to all countries for navigation and trade.

Grotius argued this in his book "Mare Liberum" in 1609 against the idea that the Portuguese could control the oceans. His theory established the principle of the freedom of the seas which said that the oceans were territory that all countries could use.[6]

Although this idea was originally meant to protect trade it introduced the idea that some areas are not controlled by any country. This idea later influenced the management of global commons, like Antarctica, the air and outer space. However it also created problems because it allowed powerful countries to use the oceans without regulation.

2.3 The Emergence of the "Common Heritage of Mankind" Principle

During the century new technology made it possible for people to go to places that were previously out of reach like the deep ocean floor and outer space. People started to worry that countries with a lot of technology would take control of these areas and keep them all to themselves.

The idea of the heritage of mankind was created to deal with this problem. This idea says that some areas do not belong to any one country and should be taken care of by everyone. A man from Malta named Arvid Pardo talked about this idea for the time in a big way in 1967 at the United Nations. He said that areas that are not part of any country should be managed together so that everyone in the world can benefit from them.

The common heritage of mankind idea has a main points. First no country can say that an area belongs to them. Second the whole world should work together to manage these areas. Third

[6] 'Mare Liberum' (Cross Border Tax Law) https://crossbordertaxlaw.com/the-perfect-case/ accessed 15 March 2026.

the benefits of these areas should be shared fairly among all people. Fourth we should use these areas in a way. Last we have to make sure that these areas are preserved for people who will come after us. This is a change from the way things used to be when anyone could just take what they wanted from these areas. Now we are trying to manage them in a way that's fair and good, for everyone and that will last for a long time. The common heritage of mankind is an idea that helps us think about how to take care of the common heritage of mankind and make sure that it is used in a way that benefits all of humanity.

2.4 From Freedom to Regulation: Institutionalizing Commons Governance

The way we think about the seas and other shared spaces has changed a lot over time. We used to believe that everyone should be free to use these spaces however they want. We learned that when nobody is in charge people can hurt the environment and use up all the resources.

This is what happens when people do not work together to take care of something that belongs to everyone. It is called the "tragedy of the commons". When people are not regulated they will use something until it is all gone.

Now we have laws and agreements that try to manage these shared spaces. We have rules for the oceans, outer space and the polar regions. These rules try to balance the need to make money protect the environment work together on science and make sure everyone gets a share.

The oceans, outer space and polar regions are all examples of these shared spaces. The rules for the oceans, outer space and polar regions are still being figured out. Even though we have made progress it is still hard to make these rules work because different countries have interests and some countries are richer than others. The oceans, outer space and polar regions are important, to everyone. We need to find a way to manage them that works for all countries.

III. Treaty Regimes Governing Global Commons: A Structural and Critical Analysis

Through a series of multilateral environmental agreements (MEAs), global commons governance has developed as a disjointed network of agreements to manage discrete environmental categories such as atmosphere/climate, oceans, and biodiversity. These treaties are international agreements that provide mechanisms for countries to work together to resolve environmental issues that go beyond individual countries (i.e., global environmental

problems).[7]

They are trying to answer a central problem in international law: how do we regulate areas of the world that exist outside of our direct control, where the degradation of these areas poses a serious threat to global stability and the well-being of humanity? The following discussion will analyze five major treaty frameworks to determine both the benefits and drawbacks of international environmental law in managing the global commons.

3.1 UNCLOS (1982): Ocean Governance and the Paradox of the "Common Heritage of Mankind"

The **United Nations Convention on the Law of the Sea (UNCLOS)[8]** is the key international law governing the ocean space. It created laws around physical borders, use-able passages and resource use all associated with the oceans. The most important part of the Convention is that the sea floor below the 200 mile limit is called "The Area" and is referred to as the "common heritage of mankind"- meaning no one can claim ownership over it and the resources should be distributed equally among all peoples of the earth. [9]

This doctrine embodies several normative commitments:

- non-appropriation of seabed resources
- collective administration through international institutions
- equitable distribution of benefits
- protection of marine ecosystems

To implement this principle, UNCLOS established the **International Seabed Authority (ISA)[10]**, which administers seabed mineral activities on behalf of humanity. The seabed area

[7] United Nations Environment Programme, 'How Multilateral Environmental Agreements Can Help Mend the Planet' (UNEP, 13 December 2023) https://www.unep.org/news-and-stories/story/how-multilateral-environmental-agreements-can-help-mend-planet accessed 15 March 2026.
[8] United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3.
[9] Helmut Tuerk, 'The International Seabed Area' in David Joseph Attard, Malgosia Fitzmaurice and Norman A Martínez Gutiérrez (eds), *The IMLI Manual on International Maritime Law: Volume I – The Law of the Sea* (Oxford University Press 2014) 276 https://doi.org/10.1093/law/9780199683925.003.0010 accessed 15 March 2026.
[10] International Seabed Authority, 'About ISA' https://isa.org.jm accessed 15 March 2026.

regulated by the ISA covers approximately **54% of the world's oceans**, making it one of the largest commons governance regimes ever created.[11]

Structural Contradictions of Ocean Commons Governance

Despite its egalitarian language, the **UNCLOS[12] regime exposes tensions between legal ideals and geopolitical realities**. Technological inequality means that few advanced states and companies can extract the deep-sea minerals, which concentrates the benefits in the Global North, although the seabed is the common heritage of mankind."[13]

The institutional design of the **International Seabed Authority (ISA)[14]** is also indicative of conflicting mandates. The policy should also ensure that the development of the minerals is encouraged but at the same time protect the marine environment to create a conflict of exploitation versus conservation. These tensions are further heightened by debates on deep-sea mining. Scientists and policymakers warn that the mining operations may cause devastating changes to the sensitive deep-sea ecosystems, but the growing need of the important minerals continues to mount pressure on the need to extract them commercially.[15]

All of these dynamics help to depict a general feature of the global commons governance: legal regimes are often a balance between protection and exploitation of the environment, not necessarily conservation-focused.

3.2 Convention on Biological Diversity (1992): Reconfiguring Sovereignty and Biodiversity Commons

The **Convention on Biological Diversity (CBD)[16]** is a radical shift in the international environmental law. Conservation treaties of the past, were mostly meant to protect a certain species or ecosystem. The Convention on Biological Diversity, in its turn, established a holistic

[11] International Seabed Authority, 'About ISA' https://isa.org.jm/about-isa/ accessed 15 March 2026.
[12] United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3.
[13] Greenpeace International, 'Developing Countries Stand to Gain Nothing from Deep-Sea Mining, New Independent Analysis Shows' (Greenpeace International, 2024) https://www.greenpeace.org/international/press-release/81726/developing-countries-deep-sea-mining-gain-nothing-mining-new-independent-analysis/ accessed 15 March 2026.
[14] International Seabed Authority, 'International Seabed Authority' https://isa.org.jm accessed 15 March 2026.
[15] Environmental Justice Foundation, 'Stop Deep-Sea Mining' https://ejfoundation.org/what-we-do/stop-deep-sea-mining accessed 15 March 2026.
[16] Convention on Biological Diversity (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79.

approach that incorporates biodiversity protection and sustainable development as well as fair distribution of benefits.

The Convention articulates three central objectives:

1. conservation of biological diversity
2. sustainable use of its components
3. **fair and equitable sharing of benefits arising from genetic resources**

These objectives were further institutionalized through the **Nagoya Protocol (2010)**[17], which established a legal framework governing access to genetic resources and the distribution of benefits derived from their utilization.[18]

Reconfiguring Ownership of Biological Knowledge

The Convention on biological Diversity (CBD) changed the legal position of the biological resources by confirming the state sovereignty to the genetic resources replacing the former view that the biological resources were a component of the international commons. Nagoya Protocol in 2010[19] provisions this framework by stipulating prior informed consent (PIC) and mutually agreed terms (MAT) in acquisition of genetic resources and distribution of benefits that might occur therein.[20]

However, several limitations remain. Benefit-sharing arrangements are often vague and negotiated case by case, creating uncertainty in implementation. Rapid advances in biotechnology and **digital sequence information (DSI)** further complicate regulation because genetic data can be extracted and shared through global databases without accessing physical

[17] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity (adopted 29 October 2010, entered into force 12 October 2014) 3008 UNTS 3.
[18] Convention on Biological Diversity, 'Access and Benefit-Sharing' https://www.cbd.int/access-benefit-sharing accessed 15 March 2026.
[19] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity (adopted 29 October 2010, entered into force 12 October 2014) 3008 UNTS 3.
[20] Irma Klünker and Heiko Richter, 'Digital Sequence Information between Benefit-Sharing and Open Data' (2022) 9(2) *Journal of Law and the Biosciences* lsac035 https://academic.oup.com/jlb/article/9/2/lsac035/6840099 accessed 15 March 2026.

biological material.[21]

In addition, the Convention on Biological Diversity (CBD) regime represents a prime example of geopolitical asymmetries between the states offering biodiversity-rich resources to the global market, typically the Global South, and those having advanced biotechnological industries. These inequalities have brought a lot of academic controversy pertaining to biopiracy, intellectual property rights, and fair distribution of gains associated with genetic resources..

3.3 International Treaty on Plant Genetic Resources for Food and Agriculture (2001): Agricultural Commons and Food Security

The **International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)[22]** represents a specialized regime governing agricultural biodiversity. Unlike the Convention on Biological Diversity, which focuses on the national sovereignty, the current treaty assumes a hybrid structure that combines the national rights and sharing of resources internationally.

The treaty established Multilateral System of Access and Benefit-Sharing hence helping the researchers and plant breeders to have access to genetic materials in a reservoir of crop species that is under a world-wide curated reservoir that is invaluable in food security.

The treaty is normatively a considerable recognition of the rights of Farmers, as it appreciates the role of agrarian people in the past, who have helped in conserving and improving agricultural biodiversity.

These rights include:

- protection of traditional agricultural knowledge
- participation in benefit-sharing
- involvement in decision-making concerning plant genetic resources

[21] F I Akpoviri, 'Digital Sequence Information and the Access and Benefit-Sharing Obligations of the Convention on Biological Diversity' (2023) *Frontiers in Environmental Science* https://pmc.ncbi.nlm.nih.gov/articles/PMC10043851/ accessed 15 March 2026.
[22] International Treaty on Plant Genetic Resources for Food and Agriculture (adopted 3 November 2001, entered into force 29 June 2004) 2400 UNTS 303.

Political Economy of Agricultural Biodiversity

Despite its progressive framework, the **International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)**[23] faces significant implementation challenges. Most germplasm exchanges occur between research institutions and commercial breeding companies rather than directly benefiting smallholder farmers.[24]

Also, the systems of intellectual property governing modern plant breeding are often in conflict with traditional agrarian activities, such as seed conservation and exchange. These contradictory aspects highlight a larger institutional tension between the management of genetic resources through commons-based governance and market-based systems of the global seed business.[25]

As a result, despite the fact that the treaty has formally recognized the role of farmers in the biodiversity of agriculture, the existing economic systems continue to marginalize the smallholder farmers in the world agricultural innovation system.

3.4 Stockholm Convention (2001): Regulating the Global Chemical Commons

The **Stockholm Convention**[26] **on Persistent Organic Pollutants (POPs)** addresses a unique category of environmental threats arising from toxic chemicals capable of long-distance atmospheric and oceanic transport.

Persistent organic pollutants are particularly dangerous because they:

- persist for decades in the environment
- bioaccumulate within food chains

[23] International Treaty on Plant Genetic Resources for Food and Agriculture (adopted 3 November 2001, entered into force 29 June 2004) 2400 UNTS 303.
[24] Armin W Ebert, 'Critical Review of the Increasing Complexity of Access and Benefit-Sharing Policies for Plant Genetic Resources for Food and Agriculture' (2023) *Plants* https://pmc.ncbi.nlm.nih.gov/articles/PMC10459714/ accessed 15 March 2026.
[25] Johannes M M Engels, Andreas W Ebert and Theo van Hintum, 'Collaboration between Private and Public Genebanks in Conserving and Using Plant Genetic Resources' (2024) 13(2) *Plants* 247 https://www.mdpi.com/2223-7747/13/2/247 accessed 15 March 2026.
[26] Stockholm Convention on Persistent Organic Pollutants (adopted 22 May 2001, entered into force 17 May 2004) 2256 UNTS 119.

- travel across national borders through atmospheric circulation

Through the Convention, a world regulatory system is created the aim of which is to destroy or limit the manufacturing and use of such chemicals. one of the salient aspects of the treaty is that it is based on scientifically based risk assessment mechanisms to determine and list the hazardous substances that should be regulated globally. However, the treaty also encompasses the provisions that encourage the people to participate and allow access to environmental information in the decision-making process.

Governance Challenges in Chemical Regulation

The Stockholm Convention faces significant implementation problems even though it has a scientific orientation. Persistent organic pollutants need sophisticated regulatory structures to effectively monitor and control them; however, many developing countries do not have the resources and technical knowhow.[27]

Furthermore, the influence of industries has an identifiable effect on negotiations in relation to the introduction of new chemicals, but structures of public involvement are mostly feeble and non-compulsory. In turn, these forces give rise to a heterogeneous jurisdictional implementation pattern. To this extent, the international chemical commons continues to be governed in a structural manner that is unfair to those states that have strong regulatory capabilities and those which lack institutional and technical means.

3.5 Paris Agreement (2015): Governing the Atmospheric Commons

The **Paris Agreement**[28] represents the most ambitious attempt to address the degradation of the atmospheric commons through coordinated global climate action.

The aim of the Treaty is to limit the rise in world temperature to a maximum of less than 2 o C above pre-industrial temperatures, and also to promote efforts to limit the rise to 1.5 o C. Unlike antecedent instruments like the Kyoto Protocol which subjected developed nations to binding

[27] Ishmail Sheriff, Sisay Abebe Debela and Aruna Mans-Davies, 'The Listing of New Persistent Organic Pollutants in the Stockholm Convention: Its Burden on Developing Countries' (2022) 130 *Environmental Science & Policy* 9 https://www.sciencedirect.com/science/article/pii/S1462901122000119 accessed 15 March 2026.

[28] *Paris Agreement to the United Nations Framework Convention on Climate Change*, Dec. 12, 2015, T.I.A.S. No. 16-1104.

quotas of emission set limits, the Paris Accord adopts a bottom-up governance structure that is based on nationally determined contribution. This kind of construct recognizes that there was a political reality that globally committing emissions limits would not allow universal participation.

The Limits of Voluntary Climate Governance

Climate change illustrates how environmental degradation produces systemic human rights consequences. The **Paris Agreement (2015)**[29] tackle this issue by using a bottom-up model whereby states provide nationally determined contributions (NDCs) which outline their climate obligations. These commitments are, however, mostly voluntary and not legally binding hence creating governance problems.

The existing national commitments are not adequate to achieve the targets of the temperature in the treaty, and thus the gap between political and scientific requirements. Furthermore, as much as human rights are mentioned in the preamble to the Paris Agreement, there are no such provisions in binding operation articles.[30]

The controversies in the field of climate governance reflect the general conflict between the climate justice movement and the forces of geopolitics, when the developing countries refer to their historical contribution and demand financial and technological support of the industrialized countries.

IV. Human Rights Implications of Global Commons Governance

The introduction of human rights in global environmental regulation is a radical change in the international law sphere. Historically, the tools that govern the global commons have mainly aimed at harmonize state behaviour and manage joint resources, leaving human rights to a marginal issue. With environmental degradation becoming a crucial issue in today practice, it is being formulated more as a threat to the fundamental rights, which are the right to life, health, food, water, and decent housing.

[29] *Paris Agreement to the United Nations Framework Convention on Climate Change*, Dec. 12, 2015, T.I.A.S. No. 16-1104.
[30] Legal Response International, *Guide to the Paris Agreement* (Legal Response International 2020) https://legalresponse.org/wp-content/uploads/2020/03/Guide-Paris-Agreement.pdf.

The global climate change, the decline of biodiversity, and the pollution of the environment destroy the necessary traditional conditions of human well-being, so scholars and institutions both define environmental governance as a human right protection imperative. The given paradigm shift is becoming more obvious in the recent jurisprudence, which emphasizes the non-separability of ecological integrity and human dignity.[31] It has been established by the International Court of Justice that a clean, healthy, and sustainable environment is an entitlement to the enjoyment of many human rights, therefore, making it clear that the states have environmental protection responsibilities that are related to their overall human rights.[32]

This development illustrates the gradual emergence of a human rights-based framework for evaluating the governance of global commons.

4.1 Climate Change and the Legal Reframing of Environmental Harm

The concept of climate change gives an example of how environmental degradation promotes systemic human rights implications. The atmosphere is a life-sustaining system on an international scale; its abnormalisation through greenhouse gases enhances the intensification of drought, floods, storms and sea-level elevation, thus threatening the livelihood and territorial integrity of many communities.

The Paris Agreement was the transformative normative step in recognition of the idea that climate action should embrace and integrate human rights and rights of Indigenous people and local communities.[33], and vulnerable groups.[34] However, these references appear primarily in the treaty's preamble rather than in binding provisions, leaving their legal force limited.[35]

However, the juridical meaning and discussions on climate governance have been influenced

[31] Peters A, 'ICJ Advisory Opinion: The World's Top Court Has Spoken Unequivocally on States' Climate Change Obligations' (Earth.Org, 25 July 2025) https://earth.org/icj-advisory-opinion-the-worlds-top-court-has-spoken-unequivocally-on-states-climate-change-obligations/ accessed 15 March 2026.
[32] Emily Dieckman, 'A Healthy Environment Is a Human Right, UN Court Rules' (Eos, 23 July 2025) https://eos.org/research-and-developments/a-healthy-environment-is-a-human-right-un-court-rules accessed 15 March 2026.
[33] UK House of Commons Library, *Global Britain, Human Rights and Climate Change* (Debate Pack CDP-2021-0132, 1 September 2021) https://commonslibrary.parliament.uk/research-briefings/cdp-2021-0132/ accessed 15 March 2026.
[34] UNFCCC, 'Eleventh Preambular Paragraph of the Paris Agreement' https://unfccc.int/11th-preambular-paragraph accessed 15 March 2026.
[35] Margaretha Wewerinke-Singh and Ashfaq Khalfan, 'Respecting Human Rights Obligations in Climate Change Actions: Are States Evaluating NDCs' Human Rights Impacts?' (EJIL:Talk!, 8 October 2021) https://www.ejiltalk.org/respecting-human-rights-obligations-in-climate-change-actions-are-states-evaluating-ndcs-human-rights-impacts/ accessed 15 March 2026.

by the integration of the human-rights language. Such references are more and more used by judicial authorities and the international organizations in assessing state responsibilities. The recent jurisprudence shows that states have a responsibility under international law to reduce environmental damage and collaborate in protecting the climate system that means that the issue of climate change will be examined gradually under the prism of human rights and state liability.[36]

4.2 The Political Economy of Environmental Harm and Global Inequality

Damage to the environment caused by global commons degradation is not evenly spread across the world, thus contributing to the existing economic and political disparities. Once such an imbalance is clearly seen in the phenomenon of climate change. Those states that are most vulnerable to the effects of climate change, including small island countries and areas in Africa or South Asia, have historically contributed the least to greenhouse gas emissions.

This imbalance has been used in shaping the international climate law with the doctrine of common but differentiated responsibilities (CBDR) being one of them. The doctrine recognizes that although all states have a collective duty to mitigate degradation of the environment, the developed nations are supposed to have more duties due to their past emissions, and good economic standing.[37]

However, the adoption of this principle is a controversial political issue. As developing states emphasize upon historical responsibility and equity, the industrialized states often oppose the increase of responsibilities due to the economic cost. These contradictions highlight structural latent inequalities in the global environmental management, in which inequalities in wealth, technology, and political power continue to determine how international treaty regimes operate.

4.3 Indigenous Peoples and the Epistemic Dimensions of Environmental Governance

Human rights implications of global commons governance also arise from the marginalisation of Indigenous knowledge in environmental decision-making.[38] Indigenous people possess a

[36] Climate Rights International, 'International Legal Obligations on Climate & Rights' https://cri.org/international-legal-obligations-on-climate-rights/ accessed 15 March 2026.
[37] German Council on Foreign Relations (DGAP), 'Common But Differentiated Responsibilities (CBDR)' https://dgap.org/en/research/glossary/climate-foreign-policy/common-differentiated-responsibilities-cbdr accessed 15 March 2026.
[38] 'Indigenous Rights Should Be at the Heart of Climate Commitments' (Eco-Business, 12 February 2026) https://www.eco-business.com/news/indigenous-rights-should-be-at-the-heart-of-climate-commitments/

rich ecological knowledge, gained over their interactions with a local eco-system, and which can play a major role in the sustainable management of resources available and in climate adaptation.[39]

However, the international environmental regulation has long been dominated by the privileges of technocracy and sciences. The resolutions within the treaty regimes are usually compromised behind closed doors by diplomatic talks and professional committees that are remote to the communities who are most impacted by the change in the environment.

Though, the instruments like the Paris Agreement recognise the role of Indigenous knowledge through which traditional knowledge systems should be incorporated into climate action[40], their participation largely remains consultative rather than decision-making.[41]

This observation reveals a deeper inherent conflict in the context of environmental governance whereby Indigenous knowledge is often formulated as a technical datum instead of being perceived as an inbuilt cultural and political practice that grounds community rights and the actual interrelations existing with ecosystems.

4.4 Environmental Rights and the Transformation of International Legal Norms

The identification of the right to clean, healthy, and sustainable environment is an important measure in the context of international law. Such an acknowledgement summarizes the current understanding that environmental protection is required in order to make the realization of the basic human rights a must.

The recent judicial developments have proved this view. The international court of justice has reaffirmed that a healthy environment[42] is a pre-requisite to the enjoyment of many human

accessed 15 March 2026.

[39] Simone Weichenrieder, 'Leveraging Indigenous Knowledge for Effective Nature-Based Solutions in the Arctic' (The Arctic Institute, 27 August 2024) https://www.thearcticinstitute.org/leveraging-indigenous-knowledge-effective-nature-based-solutions-arctic/ accessed 15 March 2026.

[40] Loveth Ovedje, 'The Paris Climate Agreement 10 Years After: Indigenous Rights – A Missed Opportunity?' (OpenThink Blog, Dalhousie University, 19 September 2025) https://blogs.dal.ca/openthink/the-paris-climate-agreement-10-years-after-indigenous-rights-a-missed-opportunity-7/ accessed 15 March 2026.

[41] Krystyna Swiderska, 'The Paris Agreement – A Framework for Local Inclusion' (International Institute for Environment and Development, 5 February 2016) https://www.iied.org/paris-agreement-framework-for-local-inclusion accessed 15 March 2026.

[42] Adele Peters, 'ICJ Advisory Opinion: The World's Top Court Has Spoken Unequivocally on States' Climate Change Obligations' (Earth.Org, 25 July 2025) https://earth.org/icj-advisory-opinion-the-worlds-top-court-has-spoken-unequivocally-on-states-climate-change-obligations/ accessed 15 March 2026.

rights including life, health, food, water and housing.[43]

This acknowledgement has significant implications concerning the governance of global commons, as far as the environmental damage can now be discussed as the beginning of the violation of human rights, but not merely as the inability of the regulatory systems. Based on this, courts, in greater numbers, examine environmental policies according to the provisions of human rights, thus expanding the prospects of climate litigation and enhancing the responsibility of environmental harm.

4.5 Structural Limits of Rights-Based Environmental Governance

In spite of the growing recognition of environmental rights, there is still not enough integration of human rights into the context of environmental governance. Much of the international environmental agreements primarily rely on discretionary national enforcement as a result of the lack of a supranational enforcement mechanism hence generating inequalities between the requirements set by the treaty provisions and the environmental outcomes achieved.[44]

The execution of international environmental commitments is significantly relying on the domestic legal frameworks and the existing political will but there are many states that have no institutional ability that may translate such commitments into effective environmental policies. Weak enforcement mechanisms, low levels of coordination of different regulatory bodies, and competing economic priorities are other factors that contribute to the malicious protection of the rights on the environment.[45]

Global environmental governance remains largely state based as it provides limited representation to the unfortunate peoples who are disproportionately affected by environmental degradation. Simultaneously, the existing global economic models are more inclined to growth and exploitation of resources by disregarding the ecological sustainability. These limitations show that, even though environmental rights represent an important normative achievement,

[43] Corina Heri, 'Human Rights in the ICJ's Climate Opinion: A Comparative Evaluation' (Sabin Center for Climate Change Law, Columbia Law School Blog, 1 August 2025) https://blogs.law.columbia.edu/climatechange/2025/08/01/human-rights-in-the-icjs-climate-opinion-a-comparative-evaluation/ accessed 15 March 2026.

[44] 'Enforcement Challenges of International Environmental Treaties' (Prism Sustainability Directory, 5 October 2025) https://prism.sustainability-directory.com/scenario/enforcement-challenges-of-international-environmental-treaties/ accessed 15 March 2026.

[45] Megha Sharma and Vivek Malik, 'Integrating Environmental Protection and Human Rights: An Analytical Review of India's Legal and Policy Framework' (2023) 5(1) *International Journal of Law, Policy and Social Review* 135 https://www.lawjournals.net/assets/archives/2023/vol5issue1/7127.pdf accessed 15 March 2026.

the process of the translation of the rights into effective governance practices remains a perennial challenge.

V. Structural Critique and Reform Pathways in Global Commons Governance

There is a paradox of the contemporary system of global commons governance. With the spread of treaties and institutions that manage common environmental resources, the process of environmental degradation does not stop, instead, it grows. Researchers explain this gap by structural aspects of the international system, such as disjointed regimes of governance, decisions that are state-centric, and economic drives that encourage exploitation of resources rather than sustainability.[46]

These structural constraints produce a governance system that is normatively ambitious but institutionally weak, highlighting the need for reforms in international environmental law.

5.1 Fragmentation and Institutional Complexity in Global Environmental Governance

Institutional fragmentation is one of the weaknesses of global environmental governance. Instead of having one unified regulatory system, the world commons are regulated through a number of treaties and organisations, including the UNFCCC on climate change, UNCLOS on oceans, and CBN on biodiversity.

This disjointed order creates coordination challenges since in many cases, environmental matters do not work across regimes. An example of this is ocean acidification which is fueled by greenhouse gas emission and it is dealt with by both climate and ocean treaties which are rather independent. This leads to overlapping of mandates, regulatory gaps and poor coordination of institutions as a result of fragmentation.[47]

Therefore, in many cases, global environmental governance has what scholars describe as institutional density without coherence whereby several regimes exist but cannot effectively

[46] Awadhut Vitthal Borkar and Sunil Sadashiv Ingale, 'Revisiting UNEP through Theoretical Lenses: Insights into Global Environmental Governance in the 21st Century' (2025) 7(9) *International Journal of Political Science and Governance* 185 https://www.journalofpoliticalscience.com/uploads/archives/7-9-42-175.pdf accessed 15 March 2026.

[47] Karen N Scott, 'International Environmental Governance: Managing Fragmentation through Institutional Connection' (2011) 12(1) *Melbourne Journal of International Law* https://cdrlaw.org/wp-content/uploads/2020/04/Scott.pdf accessed 15 March 2026.

integrate with each other.[48]

5.2 Power Asymmetries and the Political Economy of Global Environmental Law

The global environmental governance reflects power imbalance experienced in the international system, where inequality of economic resources, technological capacity, and political influence preconditions in the negotiation and implementation of the environmental treaties. Advanced economies, who generally have larger financial and scientific capacities, use this as an excuse to have a disproportionate impact on environmental policies, but most of the developing ones are limited in their practical involvement.[49]

These disparities affect the establishment of the treaty commitments as well as the distribution of benefits that accrue to commons governance. An example is that biodiversity-rich countries in the Global South habitually supply genetic material upon which pharmaceutical and agronomic invention is founded, but the technology infrastructure needed to commercially exploit these resources is concentrated mainly in the industrialized economies. Similar imbalances are also observed on the issue of climate governance, whereby many developing states play a very small role in global emissions but suffer severe climate impacts. These unbalances raise critical questions on the issue of equity and accountability when it comes to international environmental law,[50] highlighting the need to address historical responsibility and distributive justice within global commons governance.[51]

These structural inequalities complicate the implementation of collective environmental obligations and frequently generate political tensions within treaty negotiations.

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[48] Cinnamon Piñon Carlarne, 'Good Climate Governance: Only a Fragmented System of International Law Away?' (2008) 30(4) *Law & Policy* 450 https://sciencepolicy.colorado.edu/students/envs_4100/carlarne_2008.pdf accessed 15 March 2026.

[49] Adil Najam, 'Developing Countries and Global Environmental Governance: From Contestation to Participation to Engagement' (2005) 5(3) *International Environmental Agreements: Politics, Law and Economics* 303 https://www.researchgate.net/publication/225528840_Developing_Countries_and_Global_Environmental_Governance_From_Contestation_to_Participation_to_Engagement accessed 15 March 2026.

[50] Oleg Barabanov, 'Global Governance Through the Lens of Global Commons' (Valdai Discussion Club, 10 January 2019) https://valdaiclub.com/a/highlights/global-governance-through-the-lens-of-global-commo/ accessed 15 March 2026.

[51] Christopher Namilonga and Anesu Mironga, 'An Analysis of the Major Challenges to the Implementation, Compliance and Effectiveness of Global Environmental Governance' (2021) 9(12) *International Journal of Scientific Research and Management* FE-2021-215 https://cnxus.org/wp-content/uploads/2022/04/An-analysis-of-the-major-challenges-to-the-implementation-compliance-andeffectiveness-of-global-environmental-governance.pdf accessed 15 March 2026.

5.3 Compliance and Enforcement Deficits

Another critical weakness of global environmental governance is due to the limited enforcement, which is characteristic of international environmental agreements. The dominant use of participation by choice, as opposed to force, indicates lack of central authority in the international law, which can take the form of imposing penalties.[52]

Compliance mechanisms therefore typically emphasize reporting, monitoring, transparency, and peer review rather than punitive measures.[53] Despite the fact that such methods encourage collaboration, they often do not have the necessary power to resolve chronic non-adherence. As a result, researchers argue that stronger institutionalized structures, with distinct enforcement mechanisms, might be needed to increase the performance of the international environmental law.[54]

However, stricter enforcement suggestions are often opposed to, states are more concerned about protecting their sovereignty and protecting their economic interests. As a result, a good part of environmental treaties makes the agreement based on the cooperative tools and capacity-building programs and not on punitive ones, thus reflecting the decentralized nature of international law.[55]

5.4 The State-Centric Nature of Environmental Governance

Another limitation to global commons governance is that it is state centrically organized whereby, environmental agreements are negotiated and implemented mainly by the sovereign states. Non-state actors, such as Indigenous communities and civil society organizations, often have to play marginal roles in this process, despite having significant ecological knowledge

[52] 'Enforcement Challenges of International Environmental Treaties' (Prism Sustainability Directory, 5 October 2025) https://prism.sustainability-directory.com/scenario/enforcement-challenges-of-international-environmental-treaties/ accessed 15 March 2026.
[53] 'International Compliance Mechanisms' (Pollution Sustainability Directory, 1 December 2025) https://pollution.sustainability-directory.com/term/international-compliance-mechanisms/ accessed 15 March 2026.
[54]Empire Hechime Nyekwere, 'Global Environmental Governance Reform: The Emerging Debate on the Need for a World Environment Organization' (2019) 7(2) *Global Journal of Politics and Law Research* 23 https://www.eajournals.org/wp-content/uploads/Global-Environmental-Governance-Reform.pdf accessed 15 March 2026.
[55] Anne Peters, 'Global Commons' in Anne Peters (ed), *Max Planck Encyclopedia of Public International Law* (Oxford University Press 2008–) https://opil.ouplaw.com/view/10.1093/law:epil/9780199231690/law-9780199231690-e46 accessed 15 March 2026.

and having a personal interest in the end result.

This kind of limited participation creates a democratic deficit, as the design of policies dealing with shared resources is often done in an intergovernmental consultation that is both geographically and epistemologically remote to the affected communities. In turn, researchers suggest implementing the model of polycentric governance that incorporates the civil society, local communities, and scientific networks[56] in the decision-making process.[57]

5.5 Toward Reform: Emerging Governance Pathways

Recognising the limitations of existing governance structures, scholars and policymakers have proposed a range of reforms aimed at strengthening global commons governance.

One proposal involves the creation of a more coherent institutional architecture capable of coordinating the activities of existing environmental treaties. Some scholars have suggested establishing a **global environmental organisation** analogous to the World Trade Organization, which could provide stronger institutional leadership and coordination across environmental regimes.[58]

Reform proposals focus on **strengthening accountability and participation** in environmental governance. Scholars suggest international environmental courts or arbitration mechanisms to address environmental harm more effectively. Expanding the role of non-state actors such as civil society, scientific institutions, and local communities through **polycentric governance models** could also improve adaptability[59] and cooperation in addressing complex environmental challenges.[60]

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[56] José A Puppim de Oliveira and Haoqi Qian, 'Perspectives in Global Environmental Governance' (2023) 3(1) *Global Public Policy and Governance* 5 https://link.springer.com/article/10.1007/s43508-023-00063-4 accessed 15 March 2026.

[57] Awadhut Vitthal Borkar and Sunil Sadashiv Ingale, 'Revisiting UNEP through Theoretical Lenses: Insights into Global Environmental Governance in the 21st Century' (2025) 7(9) *International Journal of Political Science and Governance* 185 https://www.journalofpoliticalscience.com/uploads/archives/7-9-42-175.pdf accessed 15 March 2026.

[58] Maria Ivanova, *International Environmental Governance Reform: Options and Implications* (Chatham House 2007) https://www.chathamhouse.org/sites/default/files/public/Research/Energy%2C%20Environment%20and%20Development/260707ieg2.pdf accessed 15 March 2026.

[59] Heidi Scott, *Polycentric Governance: When Is It Good?* (SESYNC, 27 July 2023) https://www.sesync.org/resources/polycentric-governance-when-it-good accessed 15 March 2026.

[60] *Polycentric Environmental Governance* (Sustainability Directory, 1 December 2025) https://pollution.sustainability-directory.com/term/polycentric-environmental-governance/ accessed 15 March 2026.

Many scholars also emphasise integrating **human rights principles** into environmental governance so that environmental policies better protect vulnerable populations and strengthen accountability for ecological harm.

5.6 Reimagining Commons Governance in the Anthropocene

The accelerating environmental crises of the twenty-first century have led scholars to question whether existing governance frameworks remain adequate for addressing planetary challenges. The **Anthropocene** is characterized by unprecedented human influence over Earth systems, creating environmental processes[61] that transcend traditional legal boundaries.[62]

Global commons governance requires the control of ecological mechanisms functioning on planetary levels at the same time in accordance with the principle of state sovereignty. This contradiction has stimulated the need to have more integrated and receptive governance systems that would be able to organize collective action, and counter the political and economic disparities that determine environmental outcomes.[63]

6. Conclusion

The management of global commons has become one of the critical concerns of international law which has been triggered by demands to govern transboundary resources that are considered essential to human survival but which are beyond the jurisdiction of the national jurisdiction. In the next decades, a multisided growth of multilateral treaties, inter-governmental organizations, and other instruments to control at least various areas has come into existence to regulate in the marine ecosystem, biological diversity, atmosphere climate, and other transboundary environmental spheres. Such arrangements are reflective of a good deal of legal ingenuity, and reflect a growing agreement that such resources should be held in common, to benefit the wellbeing of the world.

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[61] Johan Rockström and others, 'The Planetary Commons: A New Paradigm for Safeguarding Earth-Regulating Systems in the Anthropocene' (2024) *Proceedings of the National Academy of Sciences* https://pmc.ncbi.nlm.nih.gov/articles/PMC10835110/ accessed 15 March 2026.

[62] Philipp Pattberg and Fariborz Zelli, 'Global Environmental Governance in the Anthropocene: An Introduction' in Philipp Pattberg and Fariborz Zelli (eds), *Environmental Politics and Governance in the Anthropocene: Institutions and Legitimacy in a Complex World* (Routledge 2016) https://lucris.lub.lu.se/ws/files/36136181/Pattberg_Zelli_Anthropocene_Intro.pdf accessed 15 March 2026.

[63] Johan Rockström and others, 'The Planetary Commons: A New Paradigm for Safeguarding Earth-Regulating Systems in the Anthropocene' (2024) *Proceedings of the National Academy of Sciences* https://pmc.ncbi.nlm.nih.gov/articles/PMC10835110/ accessed 15 March 2026.

However, empirical studies reveal that a permanent gap was present between normative desire and practical effectiveness. The presence of widening corpus of treaty regimes has not stopped environmental degradation. The academic community tends to attribute this disjunction to structural obstacles, such as disfigured governance structures, unequal economic and technological power among state actors, poor enforcement, and the hegemony of state-based decision-making machineries.[64]

The gradual integration of human-rights concepts in the environmental law is an important change that can potentially enhance accountability and change the way the global commons are governed. However, the achievement of good governance requires more coordinated institutional structures, greater accountability systems, and greater involvement of the affected communities.

Finally, the management of the global commons creates more extensive questions about justice, fairness, and common responsibility. It is not only the legal frameworks that will determine the long-term effectiveness of the international environmental law but also the willingness of the states to cooperate to protect common systems on the planet to protect the current and future generations.

[64] Fariborz Zelli and Harro van Asselt, 'Introduction: The Institutional Fragmentation of Global Environmental Governance: Causes, Consequences, and Responses' (2013) 13(3) *Global Environmental Politics* 1 https://direct.mit.edu/glep/article/13/3/1/14621/Introduction-The-Institutional-Fragmentation-of accessed 15 March 2026.