THE IMPACT OF ENVIRONMENTAL SUSTAINABILITY ON COMMERCIAL ACTIVITIES IN AREAS BEYOND NATIONAL JURISDICTION

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1. *Introduction*

The need to ensure environmental sustainability at the global level is increasingly urgent due to the dramatic noxious impact of human activities on the global ecosystems.

States have so far adopted international obligations aimed primarily at regulating human activities taking place within their territory, in order to prevent its deterioration and the extension of damage to the territory of other States. In fact, States can better control private and public actors operating within their territorial jurisdiction.

However, the harmful impact of human activities is not limited to the territory under State jurisdiction. Significant damage has also been recorded in areas beyond national jurisdiction. Such damage results from the cumulative impact of human activities occurring in both the territories under State jurisdiction and the areas beyond that jurisdiction.

The present chapter aims at analysing whether existing international norms are effective at ensuring the environmental sustainability of human activities, particularly those of a commercial

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nature, which occur in the areas that are not subject to the authority of any State.

Current international obligations concerning environmental sustainability are not exclusively applicable in the areas under State jurisdiction. For example, the norms of the United Nations Framework Convention on Climate Change (UNFCCC)[1] and of the Convention on Biological Diversity (Biodiversity Convention)[2] do not exclude their application in areas beyond national jurisdiction. While international law has traditionally guaranteed the freedom of States in the latter areas, over the past sixty years, numerous obligations have been established to safeguard the integrity of such areas in the interests of all States and the humankind, as a whole. In fact, the conservation of the environment in areas beyond national jurisdiction has repeatedly been recognized as a collective interest under international law.

In order to ascertain whether the recognition of such a collective interest may affect the regulation of commercial activities taking place in areas beyond national jurisdiction, some concepts require to be defined.

First of all, the concept of environmental sustainability, which is strictly linked to the notion of sustainable development, calls for clarification due to the ambiguity that such notion has shown since its original formulation in the 1987 Brundtland Report.[3] Far from seeking to provide an in-depth analysis of the concept of sustainable development,[4] this chapter intends to assess whether the concept of environmental sustainability, as traditionally formulated, can be interpreted differently depending on the

[1] United Nations Framework Convention on Climate Change (UNFCCC), New York, 9 May 1992, United Nations, *Treaty Series*, vol. 1771, p. 107.

[2] Convention on Biological Diversity (Biodiversity Convention), Rio de Janeiro, 5 June 1992, United Nations, *Treaty Series*, vol. 1760, p. 79.

[3] United Nations General Assembly, "Report of the World Commission on Environment and Development", 4 August 1987, A/42/427.

[4] For a thorough analysis of the concept of sustainable development and environmental sustainability see A. Boyle, D. Freestone (eds), *International Law and Sustainable Development. Past Achievements and Future Challenges* (Oxford, Oxford University Press, 1999).

diverse circumstances in which commercial activities take place in distinct areas beyond national jurisdiction. Moreover, environmental sustainability is strictly linked to the protection of public interests, such as equitable sharing of natural resources among human beings and intergenerational equity. For this reason, the concept of public interest requires a definition based on the various conventional regimes adopted in recent decades.

Furthermore, areas beyond national jurisdiction cannot be encompassed in a single category due to their different physical characteristics and, most significantly, their diverse status and destination under international law.

In addition, although commercial activities may include several types of human conducts that are carried out for lucrative purposes, the concrete possibilities of using land, marine, and space areas have increased in recent times.

Moreover, existing international norms establishing the obligation to ensure the environmental sustainability of human activities are very broad in scope. Therefore, the interpretation of such norms is essential to understand to what extent commercial activities taking place in areas beyond national jurisdiction can be considered sustainable.

Besides, to accomplish the goal of environmental sustainability, effective instruments for enforcing international norms are required. States can ensure such enforcement within their domestic jurisdiction. In the absence of supernational authorities that may effectively control and sanction the potential breaches of international rules dealing with environmental sustainability in areas beyond national jurisdiction, it is necessary to ascertain through which instruments international obligations may be enforced in those areas in order to prevent irreversible damage to the already alarming conditions of the global environment.

In short, to assess to what extent international norms dealing with environmental sustainability may have an impact on commercial activities in areas beyond jurisdiction, it is not sufficient to ascertain whether such norms exist, but the scope and effectiveness of such norms require to be delineated in concrete terms.

2. *Defining Environmental Sustainability in Areas beyond National Jurisdiction as a Public Interest*

According to the 1987 Brundtland Report,[5] sustainable development is the development of human beings that "meets the needs of the present without compromising the ability of future generations to meet their own needs." Similarly, environmental sustainability entails the ability to exploit the environment and its resources and, at the same time, to guarantee the same prerogative to future generations as it is sanctioned in Article 2 of the Biodiversity Convention.[6]

This definition appears to be quite vague. First of all, the legal nature of the concept of sustainable development and the obligation to guarantee environmental sustainability is unclear. While some authors recognise the legal and binding nature of the principle of sustainable development,[7] other legal tenets support the idea that sustainable development is merely a goal that may be achieved by carrying out human activities consistent with rules, such as the duties to prevent environmental damage or to carry out environmental impact assessment, which are binding under international customary and treaty law.[8]

Moreover, even assuming that there was an obligation to en-

[5] United Nations General Assembly, "Report of the World Commission on Environment and Development", cit.

[6] Article 2 of the Biodiversity Convention defines the term "sustainable use" as "the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations."

[7] For this view see K. Bosselman, *The Principle of Sustainability Transforming Law and Governance* (London, Routledge 2017). For a thorough analysis of the different views of legal doctrine relating to the concept of sustainable development see M. Montini, "L'interazione tra gli SDGs ed il principio dello sviluppo sostenibile per l'attuazione del diritto internazionale dell'ambiente", in *Federalismi.it*, IX (2019), pp. 11-12.

[8] For the view that the concept of sustainable development consists of the final goal that may only be accomplished by complying with the international procedural obligations dealing with environmental protection, see P. Birnie, A. Boyle, C. Redgwell, *International Law and the Environment*, (Oxford University Press, Oxford, 2009). For a thorough analysis of the concept of

sure environmental sustainability, its content would be extremely variable. Sustainable development, in fact, can be interpreted differently depending on the diverse interests that the international community or individual States wish to prioritise.[9] For example, the use of an area, such as the international sea, has so far been free. Instead, the use of areas, such as Antarctica and Outer space, is permitted only in a very restrictive manner.

Finally, the feasibility of achieving the goal of sustainable development and environmental sustainability should be assessed on the basis of objective criteria, such as scientific data that take into account the concrete impact of human activities on the environment.[10] In line with this scientific assessment, the international community and individual States should regulate human activities especially when these activities affect the areas of the planet that do not belong to any State, but to the international community as a whole.[11]

The pursuit of environmental sustainability also raises the question of whether this objective may be equated with public interest.[12] In fact, the obligation to preserve some common

sustainable development see PH. SANDS, *Principles of International Environmental Law* (Cambridge, Cambridge University Press 2003), p. 253.

[9] For the view that environmental sustainability and sustainable development are empty signifiers in which everybody may put different content according to the concrete situations to which this concept must be applied, see T.A. STOJANOVIC, C.J.Q. FARMER, "The Development of World Oceans and Coasts and Concepts of Sustainability" in *Marine Policy*, XLII (2013), p. 157, at p. 162.

[10] W.C. CLARK, N.M. DICKSON, "Sustainability Science: The Emerging Research Program" in *Proceedings of the National Academy of Sciences*, C (2003), p. 8059.

[11] For the view that the concept of sustainable development should be a guiding approach for States' political and economic choices, see F. FRANCIONI, "Sviluppo sostenibile e principi di diritto internazionale dell'ambiente", in P. Fois (ed), *Il principio dello sviluppo sostenibile nel diritto internazionale ad europeo dell'ambiente* (Napoli, Editoriale Scientifica 2007), p. 43.

[12] The interconnection between environmental sustainability and public interest can be inferred from the need to involve public decision-making processes and participation to accomplish both these goals. For this view see, M. MONTINI, "L'interazione tra gli SDGs ed il principio dello sviluppo sostenibile per l'attuazione del diritto internazionale dell'ambiente", cit., p. 11. See also J.M. HARRIS, "Basic Principles of Sustainable Development", Global Develop-

goods, the so-called global commons, such as climate change and biodiversity, is frequently associated with the interest of humankind as whole, even when these goods fall within State jurisdiction. Even more, States should guarantee the sustainable management of areas beyond national jurisdiction in the public interest because these areas belong to everyone equally. Therefore, it is necessary to understand to what extent such public interest is acknowledged within the diverse treaty regimes governing areas beyond national jurisdiction and how it impacts on the regulation of commercial activities in those areas.

Public interest is not understood in the same manner under international law. Some treaties only mention collective interests in their preambles declaring that a specific area must be preserved in the interest of humankind as a whole. However, such declaration does not entail the adoption of similar provisions in those treaties. For example, although the preambles of both the Antarctic Treaty[13] and United Nations Convention on the Law of the Sea (UNCLOS)[14] include such a declaration, the regimes that they establish result to be totally different. While the public interest in the conservation of Antarctica has led States Parties to exclude almost all commercial activities from the area, the UNCLOS allows for the free use of the international seas.

Other international legal instruments recognise a limited role

ment and Environment Institute, *G-DAE Working Paper No. 00-04* (2000), p. 1, at p. 10.

[13] Antarctic Treaty, Washington, 1 January 1959, in United Nations, *Treaty Series* vol. 402, p. 71. According to Article IV of the Antarctic Treaty, States Parties that used to claim sovereignty over Antarctic territories before the adoption of the Treaty still have the right to maintain such claims. States claiming sovereignty in Antarctica are seven. They are named "Claimant States" and include Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom. Simultaneously, Article IV also recognises the right of the other Parties to the Treaty to deny sovereignty claims. In this manner, Claimant States cannot exercise their claimed sovereign rights with respect to other States and their nationals. Therefore, their sovereignty over Antarctic territories is defined as "frozen sovereignty". For a thorough analysis of this matter see D. R. Rothwell, "Sovereignty and the Antarctic Treaty", in *Polar Records*, XLVI (2019), p. 17.

[14] United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982, United Nations, *Treaty Series,* vol. 1833, p. 3.

to the public interest. For example, Principle 16 of the Rio Declaration on Environment and Development,[15] which is the provision recognising the polluter pay principle, states that the latter principle applies "having due regard to the public interest and without distorting international trade". Therefore, public interest and the distortion of international trade are two elements that may equally influence the application of the polluter pay principle without any legal (or at least moral) hierarchical relationship between them

In other circumstances, the public interest in managing an area represents the very object and purpose of a treaty regime. In these cases, such interest has been associated with specific legal concepts, such as the common heritage of (hu)mankind, to underline the global nature of the interest in that area. For example, Part XI of the UNCLOS and its implementing agreement,[16] which govern the management of the Area, i.e. the international seabed,[17] establish an institutionalised regime based on international rules, procedures, and bodies to safeguard the collective interests at issue.

Similarly, Article 11 of the Agreement governing the Activities of States on the Moon and other Celestial Bodies (Moon Treaty)[18] declares the Moon and celestial bodies as common heritage of (hu)mankind although it does not establish a specific international regime for the management of these areas.

The principle of the common heritage of (hu)mankind apparently ensures the protection of the public interest more effectively than other norms that identify goods and areas of global relevance for several reasons. First of all, it prohibits the appropria-

[15] United Nations General Assembly, "Rio Declaration on Environment and Development, Report of the United Nations Conference on Environment and Development", Annex I, 12 August 1992, A/CONF.151/26 (Vol. I).

[16] Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea, New York, 28 July 1994, United Nations, *Treaty Series*, vol. 1836, p. 3.

[17] Article 1(1) of the UNCLOS defines the Area as "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction".

[18] Agreement governing the Activities of States on the Moon and other Celestial Bodies (Moon Treaty), New York, 5 December 1979, United Nations, *Treaty Series* vol. 1363, p. 3.

tion of such goods and areas; secondly, it provides for governance by an international body or under common obligations; and thirdly, it requires the equitable sharing of benefits deriving from such goods and areas. However, as Part XI of the UNCLOS and the Moon Treaty have demonstrated, the regimes inspired by this principle seem to provide overly rigid systems of governance that have proven difficult to enforce.[19]

For this reason, the principle of common concern of humankind has been formulated in most recent times. In particular, climate change and biodiversity are considered issues of common concern of humankind.[20] In this sense, this principle can be associated with the concept of public interest, because it concerns geographical areas and issues that fall within the interest of the international community as a whole.[21] The principle of common concern of humankind requires States to take collective measures to safeguard common interests, such as the climatic conditions and biodiversity of any areas of the planet, including areas beyond national jurisdiction, without resorting to the creation of an institutionalised international regime.[22]

A combination of the principles of the common heritage and the common concern of humankind has emerged in the Agree-

[19] For an in-depth analysis of the principle of the common heritage of (hu) mankind see J.E. Noyes, "The Common Heritage of Mankind: Past, Present, and Future", in *Denver Journal of International Law and Policy*, XL (2011), p. 447.

[20] See the Preambles of the UNFCCC and Biodiversity Convention. According to the International Law Association (ILA) "the proper management of climate system, biological diversity and fauna and flora of the Earth, (is) the common concern of humankind". See International Law Association, "New Delhi Declaration of Principles of International Law relating to Sustainable Development", Resolution 3/2002, Report of the Seventieth Conference, New Delhi (2002), para. 1.3.

[21] D. Shelton, "Common Concern of Humanity", in *Environmental Policy and Law*, XXXIX (2009), p. 83, at 84.

[22] For the view that international law provides for the obligation of States to take legislative and implementing measures to preserve areas and objectives that are of common concern, see Th. Cottier, "The Principle of Common Concern of Humankind", in Th. Cottier (ed), *The Prospects of Common Concern of Humankind in International Law* (Cambridge, Cambridge University Press, 2021), p. 3.

ment under the UNCLOS on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Agreement).[23] Although Article 7(b) of this agreement mentions the principle of common heritage of (hu) mankind, it maintains that this principle just serves to guide States Parties in achieving the objectives of the BBNJ Agreement.[24] Therefore, the BBNJ Agreement appears to provide a new construction of the principle of the common heritage of (hu) mankind, which does no longer serve to recognise a specific legal status of a geographical area, but it ensures that States achieve the main objectives inherent in this principle, i.e. equitable access to and sharing of resources between present and future generations.

In sum, despite the different interpretations of the concept of public interest that may be provided under international law, the sustainable use of areas beyond national jurisdiction appears to fall within such interest and requires specific regulatory measures for all human activities taking place in those areas.

3. *Physical and Legal Peculiarities of Areas beyond National Jurisdiction*

Environmental sustainability of human activities cannot be assessed according to the same criteria and rules in all the areas beyond national jurisdiction. In fact, these areas do not share many common characteristics with each other, except the fact that they do not belong to any State.

As affirmed above, high seas have always been considered as open for free access and use by all States. Their environmental sustainability has for long time been guaranteed only by the gen-

[23] Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Agreement), New York, 19 June 2023, United Nations, certified copy C.N.203.2023.

[24] For this view, see Z. Taghizadeh, "Marine Genetic Resources as Common Heritage of Mankind under the BBNJ Agreement; The International Community toward a Pragmatic Benefit-Sharing Approach?", in *Biodiversity and Conservation*, XXXIV (2025), p. 131.

eral obligation to protect the marine environment. Most recently, some more detailed norms have been adopted with regard to the conservation of marine living resources that have been seriously affected by unregulated and, sometimes, illicit fishing. For example, the living resources of a very fragile area, such as the international waters of the Arctic Ocean, have been only recently safeguarded according to a specific treaty regime. Most precisely, Article 2 of the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (Arctic Ocean Agreement)[25] compels States Parties to adopt precautionary conservation and management measures to ensure the sustainable use of fish stocks.

Similarly, Article 2 of the BBNJ Agreement states that its objective is "to ensure the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, for the present and in the long term, through effective implementation of the relevant provisions of the Convention (namely, the UNCLOS)". In light of this objective, the BBNJ Agreement established that States must adopt measures in order to guarantee that marine genetic resources are exploited sustainably and shared equitably among States in the interest of humankind as a whole.

An analogous regime applies to the Outer space that is explicitly declared as "province of all (hu)mankind" in Articles I of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty)[26] and 4 of the Moon Treaty. In particular, Article 7(1) of the Moon Treaty establishes the obligation of States Parties "to take measures to prevent the disruption of the existing balance of its environment". Still,

[25] Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (Arctic Ocean Agreement), Ilulissat, 3 October 2018, ST/10788/2018/INIT, European Union, *Official Journal*, L 73 (15 March 2019), p. 3. For a detailed exam of this agreement see E.J. Molenaar, "The Central Arctic Ocean Fisheries Agreement and Arctic Indigenous Peoples", in *Marine policy*, CLXIV (2024), pp. 1-9.

[26] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty), London, Moscow and Washington, D.C., 27 January 1967, United Nations, *Treaty Series,* vol. 610, 206.

States must adopt measures to safeguard the common interest in the preservation of space areas and resources.[27]

In contrast, the Area and its resources are not only proclaimed common heritage of (hu)mankind, but they are also subject to an international institutionalised management regime in which the measures to be followed by State and private operators are adopted by international bodies.

Finally, although Antarctica is considered as an area beyond national jurisdiction for the purposes of this chapter, according to the Antarctic Treaty, which has governed this area for more than 65 years, some claims to sovereignty over certain territories of the Antarctic continent are permitted. For this reason, Antarctica has not so far generally been recognised as common heritage of (hu)mankind. However, Article 2 of the Protocol on Environmental Protection to the Antarctic Treaty (PEPAT),[28] recognises the status of Antarctica as a "natural reserve devoted to peace and science". As such, Antarctica must be preserved in the interest of humankind, as a whole.[29]

In sum, the goal of environmental sustainability for activities carried out in areas beyond national jurisdiction cannot be achieved under the same rules and obligations due to the different physical and legal characteristics of these areas. Therefore, while certain activities are banned in some of these areas, they may still be permitted in others.

4. *Regulating Commercial Activities in Areas beyond National Jurisdiction*

Commercial activities occurring in areas beyond national jurisdiction may have different characteristics and, consequently, different impact on the environment of such areas.

[27] For the importance of considering Outer space as a part of the environment that must be used in a sustainable manner see M. Byers, A. Boley, *Who Owns Outer Space? International Law, Astrophysics and the Sustainable Development of Space* (Cambridge, Cambridge University Press, 2023), p. 9.

[28] Protocol on Environmental Protection to the Antarctic Treaty (PEPAT), Madrid, 4 October 1991, in United Nations, *Treaty Series*, vol. 2941, p. 9.

[29] Preamble of the PEPAT, para. 8.

For instance, in addition to fishing and navigation that have traditionally been carried out in the international waters, other activities have recently taken place at sea although they are not yet thoroughly regulated under international law. As an example, the installation of offshore structures, such as wind turbine blades and platforms to carry out prospecting activities, are increasingly frequent.[30] Under the law of the sea, and, especially, UNCLOS norms regulating the management of the high seas, these activities are considered sustainable as long as they do not cause damage to the marine environment.[31] Therefore, the installation of offshore structures has been deemed to be consistent with the international law of the sea even though such installation entails the partial occupation of the international sea, which, by its very nature, should be excluded from public and private appropriation.[32]

Further, some activities, such as artificial carbon sequestration techniques at sea, have being considered by international fora to reduce the growing presence of carbon dioxide (CO2) in the atmosphere.[33] These activities entail the capture and storage of CO2 in the oceans and seabed.[34] Due to the high level of tech-

[30] For the view that an increasing industrialisation of the sea has taken place in the last decades see T.A. Stojanovic, C.J.Q. Farmer, "The Development of World Oceans and Coasts and Concepts of Sustainability", cit., p. 160.

[31] Article 87(d) of the UNCLOS allows States to establish artificial islands, installations, and structures in the high seas.

[32] For the view according to which modern activities carried out in the international waters entail a sort of colonisation of the seas, see T.A. Stojanovic, C.J.Q. Farmer, "The Development of World Oceans and Coasts and Concepts of Sustainability", cit., p. 161.

[33] For an example of support for the enactment of carbon sequestration mechanisms to mitigate the noxious impact of climate change on the oceans, see United Nations, Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development, "Declaration on Our ocean, our future, our responsibility", Lisbon 17 June 2022, A/CONF.230/2022/12, para. 4.

[34] For the definition of carbon sequestration, see N. Eckley, E. Selin, "Carbon Sequestration", in *Encyclopaedia Britannica*, (16 January 2019), available at https://www.britannica.com/technology/carbon-sequestration.

nology and costs involved, they are at present primarily available to private companies. However, the long-term impact of these activities on the environment of the oceans and deep seabed remains uncertain. Therefore, despite the unquestionable usefulness of carbon sequestration activities in supporting global decarbonisation, such activities might prove harmful for the marine environment. For this reason, they have not yet been applied.

Commercial activities have not been permitted in the Area to date, both due to the restrictive regime established in Part XI of the UNCLOS and because of the impracticality of mining activities at extreme depths. However, the International Seabed Authority, which is the governing organisation of the Area under the UNCLOS,[35] is currently negotiating some regulations concerning the exploitation of mineral resources in the Area.[36] If these regulations were to come into force and mining activities were to be carried out in the Area, the impact of such activities could be devastating for the marine environment. For this reason, some concern has already been raised by the United Nations Special Rapporteur on the promotion and the protection of human rights in the context of climate change.[37] The Special Rapporteur has in fact suggested adopting a moratorium on mining activities in the Area in order to preserve the already compromised state of the oceans and the rights of the populations who depend on the use of the marine environment and resources for their survival.

In this regard, the International Seabed Authority has addressed the issue of the conservation of the marine environment of the Area in three regulations, adopted more than a decade ago, with regard to prospecting and exploration of mineral resources.[38] These regulations provide a detailed definition of ma-

[35] Article 157 of the UNCLOS.

[36] International Seabed Authority, Draft Regulations on Exploitation of Mineral Resources in the Area, 15 February 2026, ISBA/31/C/CRP.1/Rev.2.

[37] United Nations General Assembly, "Report of the Human Rights Council Special Rapporteur on the Promotion and the protection of human rights in the context of climate change, Professor Elisa Morgera, A human rights-based approach to the energy transition", 15 July 2025, A/80/188.

[38] International Seabed Authority, "Decision of the Assembly of the International Seabed Authority relating to the regulations on prospecting and ex-

rine environment, which encompasses "physical, chemical, geological and biological components, conditions and factors which interact and determine the productivity, state, condition and quality of the marine ecosystem, the waters of the seas and oceans and the airspace above those waters, as well as the seabed and ocean floor and subsoil thereof."[39] This broad definition requires safeguarding all the components and conditions of the marine environment, which also seem to include marine currents and the existing state of ecosystems. Therefore, to comply with these requirements, commercial mining might be limited, if not completely prohibited, in the Area. In sum, even the regulations of the International Seabed Authority appear to reaffirm the conservative character of the regime that is established in Part XI of the UNCLOS.[40]

Strict regulations have not prevented commercial activities from taking place in the Outer space. Although the placement of satellites may still be considered to be a benefit for humanity even when carried out by private companies for lucrative purposes, this activity might still result in an obstacle to the equitable sharing of this area. In fact, the positioning of satellites somehow entails the occupation of the Outer space, which should be not allowed, considering that it is the common heritage of (hu)

ploration for polymetallic sulphides in the Area", 15 November 2010, ISBA/16/A/12/Rev.1, "Decision of the Assembly of the International Seabed Authority relating to the Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area", 22 October 2012, ISBA/18/A/11, and "Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters", 22 July 2013, ISBA/19/C/17.

[39] International Seabed Authority, Regulation 1(3)(c) of the Regulations on prospecting and exploration for polymetallic sulphides in the Area, cit. All the three adopted regulations provide the same definition of marine environment, which is also mirrored in the Draft Regulations on the exploitation of mineral resources.

[40] For the relevance of the issue of the protection of the marine environment in new regulations of the International Seabed Authority see, T. SMAJIC, "Climate Change and Deep Seabed Mining: Implications of the COSIS Advisory Opinion" in *Ocean Development & International Law*, LVI (2025), p. 415, at p. 435.

mankind. In addition, since orbit shells are not infinite, their occupation will sooner or later exclude other public or private entities from using the Outer space to deploy their satellites.[41] Finally, satellite debris resulting from the destruction of satellites and remaining in space can jeopardise space expeditions and other satellites. In this regard, the European Union has condemned Russia's practice of intentionally destroying its inoperative satellites to test anti-satellite weapons.[42]

Most significantly, other private space activities, such as tourist expeditions do not appear to be consistent with the spirit of the Outer space and Moon Treaties, which declare these areas as province of all (hu)mankind.[43]

Finally, the global shortage of mineral resources could also encourage public and private entities to explore the Moon for the purpose of extracting its mineral resources. In this regard, some States have already adopted non-binding principles that envisage the possibility of exploiting space resources.[44] According to these States, the legitimacy of the exploitation of the resources of the Outer space might be inferred from the norms of both the Outer space and Moon Treaties. In fact, Article III of the Outer Space Treaty only requires States to ensure that the use of outer space is peaceful. To this end, according to Article 11(5) of the Moon Treaty, Parties must establish an international re-

[41] See M. Byers, A. Boley, *Who Owns Outer Space? International Law, Astrophysics and the Sustainable Development of Space*, cit., p. 69.

[42] High Representative of the Union for Foreign Affairs and Security Policy, "Statement on behalf of the European Union on the Russian anti-satellite test", 15 November 2021 as quoted by M. Byers, A. Boley, *Who Owns Outer Space? International Law, Astrophysics and the Sustainable Development of Space*, cit., p. 328.

[43] *Ivi*, p. 44.

[44] In this regard, see Section 10 of the Artemis Accords that were adopted by the National Aeronautics and Space Administration (NASA) in cooperation with the United States Department of State. The Artemis Accords provide guidelines for outer space activities and have so far been ratified by 56 States. National Aeronautics and Space Administration, "Artemis Accords. Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes", 13 October 2020, p. 4.

gime for regulating the exploitation of resources.[45] Therefore, if States succeed in establishing such a regime, the exploitation of space resources could become a reality. However, pending an international regime that ensures equitable benefit-sharing, it remains uncertain whether and for how long States will be able to continue to impose the general obligation to preserve the integrity of Outer space on private actors that have already undertaken commercial space activities.

Therefore, along with the physical environment, commercial activities occurring in the Outer space may also endanger the very spirit of the regime that has so far governed this area.

Further, commercial activities are prohibited on the Antarctic continent. Under the PEPAT, both Antarctic living and mineral resources may be exploited only for scientific purposes.[46] This is mainly because, as affirmed above, the PEPAT recognises Antarctica as a nature reserve that can only be used for peaceful purposes. For this reason, despite the global shortage of mineral resources, the Antarctic mineral reserves have so far remained intact. However, the norms of the PEPAT, including Article 7, which prohibits commercial mining, can be amended, pursuant to Article 25, fifty years after the entry into force of the PEPAT, i.e. 2048. The possibility of amending the PEPAT has led some States and private actors to believe that the Antarctic Treaty System (ATS), namely the regime originated from the Antarctic Treaty,[47] may permit the exploitation of Antarctic mineral re-

[45] For a thorough analysis of this issue see M. Byers, A. Boley, *Who Owns Outer Space? International Law, Astrophysics and the Sustainable Development of Space*, cit., p. 157.

[46] Article 7 of the PEPAT prohibits any mineral activities in the Antarctic continent but for scientific purposes. Article 3 of Annex II to the PEPAT on the conservation of Antarctic flora and fauna only allows exploitation of specimens under permit for scientific purposes. For an analysis of the exploitation of Antarctic resources see A. Press, A. Constable, "Conservation Law in Antarctica and the Southern Ocean: The Antarctic Treaty System, Conservation, and Environmental Protection", in *Australian Journal of International Affairs*, LXXVI (2022), p. 305.

[47] According to Article 1(e) of the PEPAT, the Antarctic Treaty System (ATS) encompasses "the Antarctic Treaty, the measures in effect under that

sources in the near future.[48] For this reason, the States Parties to the Antarctic Treaty have felt the need to reaffirm their commitment to prohibiting commercial mining in Antarctica.[49]

The only commercial activities permitted in Antarctica are fishing, which is regulated according to the Convention on the Conservation of Marine Living Resources (CCAMLR),[50] and tourism that has so far scarcely been addressed under the ATS because of the lack of consensus among the States Parties.[51] In this regard, the massive scale of both these activities has already significantly impacted the integrity of the Antarctic environment, as demonstrated by the dramatic melting of the ice and the decline of species.[52]

Therefore, the proliferation of commercial activities in areas, such as Antarctica and Outer space, does not only jeopardise the integrity of their physical environment, but it also conflicts with the founding principles of the treaty regimes governing these areas, according to which they should be used for the benefit of humanity, rather than for the lucrative and selfish interests of a few commercial operators.

Treaty, its associated separate international instruments in force and the measures in effect under those instruments."

[48] For the impact of Article 25 of the PEPAT on the prohibition of commercial mining in Antarctica see A.J. Press, A.W. Jackson, "Mining in Antarctica to 2048 and Beyond", in S. Scott, T. Stephens, J. McGee (eds) *Geopolitical Change and the Antarctic Treaty System* (Singapore, Springer Polar Sciences, 2024), p. 231.

[49] See, for example, Antarctic Treaty Consultative Meeting, Resolution 3 (2023), "Reaffirming ongoing commitment to the prohibition on Antarctic mineral resource activities, other than for scientific research", XLV Antarctic Treaty Consultative Meeting, Helsinki 2023.

[50] Canberra, 20 May 1980, United Nations, *Treaty Series* vol. 1329, p. 47. Article II(2) of the CCAMLR allows the "rational use" of marine living resources.

[51] Article 3(2)(a) of the PEPAT allows lawful human activities as long as they are "planned and conducted so as to limit adverse impacts on the Antarctic environment."

[52] For the impact of tourist activities on the Antarctic environment, see D. Liggett, E. J. Stewart, "Governance of Tourism in the Global Commons: The Case of Antarctica", in J. Saarinen, C. M. Hall (eds), *Handbook on Tourism Governance* (Cheltenham, Edward Elgar, 2025), p. 301.

5. *General Principles Ensuring Environmental Sustainability in the Public Interest*

The general principles of environmental sustainability have a very broad scope and are enshrined in both customary international law and treaty regimes applicable to various situations. Therefore, to determine how these principles can be applied to commercial activities carried out in areas beyond national jurisdiction to achieve sustainability goals, their concrete content must be ascertained. To this end, particular attention will be paid to three advisory opinions adopted by authoritative international bodies over the past 15 years, namely, the opinions of the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea on the duties and responsibilities of States sponsoring mineral activities in the Area,[53] of the International Tribunal for the Law of the Sea on international law and climate change,[54] and of the International Court of Justice on the duties of States as to climate change.[55] The interpretation provided in these advisory opinions with regard to the general principles enshrining the protection of the environment and its sustainable use appears to be extremely effective because the judicial bodies involved based their reasoning on several instruments of international law.[56] In particular, the International Tribunal for the Law of the Sea that, by virtue of its mandate, should have limited its analysis to examining the provisions of the UNCLOS in order to determine the scope of the ob-

[53] International Tribunal for the Law of the Sea, Advisory Opinion of 1 February 2011, *Responsibilities and obligations of States with respect to activities in the Area*, ITLOS Reports (2011), p. 10.

[54] International Tribunal for the Law of the Sea, Advisory Opinion of 21 May 2024, *Request for an Advisory Opinion Submitted by the Commission of Small Island States* (COSIS) *on Climate Change and International Law*, Case n. 31, ITLOS Reports (2024), p. 7.

[55] International Court of Justice, Advisory Opinion of 23 July 2025, *Obligations of States in respect of Climate Change*, at https://www.icj-cij.org/sites/default/files/case-related/187/187-20250723-adv-01-00-en.pdf.

[56] For the relevance of the advisory power of international judicial bodies to determine the scope of international obligations, see S. Forlati, "La Corte internazionale di giustizia di fronte ai cambiamenti climatici: 'fra Scilla e Cariddi'?", in *Rivista di diritto internazionale*, CVIII (2025), p. 7.

ligation of States to preserve the marine environment in relation to climate change impacts,[57] instead delineated the scope of this obligation also in light of the provisions of the climate change regime, which includes the UNFCCC and Paris Agreement.[58]

The advisory opinion of the Seabed Disputes Chamber is the only decision that specifically addresses the issue of the environmental sustainability of commercial activities in an area beyond national jurisdiction, namely, mining in the Area. The other two opinions analyse States' obligations regarding climate change in any marine or terrestrial areas, regardless of whether they are located under or beyond State jurisdiction.

These advisory opinions define the scope of some general principles that identify the obligation of States to guarantee, and to ensure that private individuals guarantee, the environmental sustainability, in the interests of humanity, of every activity carried out in any area of the planet.

The first principle emerging from these advisory opinions is the principle of equity. This principle is twofold: on the one hand, equity affects the relationship between developing countries and industrialised States and, therefore, reaffirms the need for common but differentiated responsibilities, enshrined in the Rio Declaration on Environment and Development.[59] In light of this principle, in ensuring the environmental sustainability of human activities, developing States are not required to use the same measures and instruments available to industrialised countries.[60] In addition, developing States enjoy the right to be assisted by industrialised countries with scientific and technological support in order to gain sustainable access to resources.[61] However, the

[57] *Request for an Advisory Opinion Submitted by the COSIS on Climate Change and International Law*, cit., paras. 67-82.

[58] Paris Agreement, Paris, 12 December 2015, United Nations, *Treaty Series*, vol. 3156, p. 79.

[59] Principle 7, United Nations General Assembly, "Rio Declaration on Environment and Development", cit.

[60] *Request for an Advisory Opinion Submitted by the COSIS on Climate Change and International Law*, cit., para. 69.

[61] *Responsibilities and obligations of States with respect to activities in the Area*, cit., para. 157.

status of developing country does not exempt a State from the obligation to preserve the environmental integrity of an area, whether under or outside its jurisdiction. For example, with regard to the regulation of mining activities in the Area, the Seabed Disputes Chamber has acknowledged the responsibility of developing States to control the conduct of private individuals operating under their jurisdiction in order to prevent commercial operators from choosing to organise their activities in conjunction with States that have little capacity for control and which could, therefore, be considered as "Sponsor States of convenience".[62]

On the other hand, equity implies intergenerational equity, that is a principle inherent to the concept of sustainable development. The principle of intergenerational equity was formulated in the Rio Declaration on Environment and Development[63] to guarantee the conservation of the environment in the interest of future generations. However, the current critical condition of the environment of our planet leads us to believe that this principle has been significantly neglected in recent decades. This is particularly true regarding the issue of climate change. Both the International Tribunal for the Law of the Sea and International Court of Justice have emphasised, in their advisory opinions, that the duty to preserve the environment also encompasses the obligation to prevent future threats and damage to it.[64] In particular, the International Court of Justice has considered the principle of intergenerational equity as a criterion of equity for determining whether State policies and measures are adequate to ensure compliance with the obligation to preserve the environment.[65]

Another principle that is aimed at regulating the environmental sustainability of human activities and which is strictly connected to the concept of intergenerational equity is the precautionary principle, or precautionary approach as defined in Prin-

[62] *Responsibilities and obligations of States with respect to activities in the Area*, cit., para. 159.

[63] Principle 3, United Nations General Assembly, "Rio Declaration on Environment and Development", cit.

[64] *Request for an Advisory Opinion Submitted by the COSIS on Climate Change and International Law*, cit., para. 197.

[65] *Obligations of States in respect of Climate Change*, para. 157.

ciple 15 of the Rio Declaration on Environment and Development. To comply with this approach, States might also be compelled to prohibit activities that appear to be seriously harmful to the environment in order to safeguard it in the interests of present and future generations. The relevance of this approach has been raised in all the above-mentioned advisory opinions. In particular, the International Tribunal for the Law of the Sea has repeatedly highlighted the duty to comply with the precautionary approach that is also explicitly included in the regulations on prospecting and exploration of mineral resources in the Area[66] and which it is implied in Article 194 of the UNCLOS sanctioning the obligation to prevent and control pollution of the marine environment.[67] Similarly, the International Court of Justice, recalling its decision on the *Pulp Mills on the River Uruguay* case,[68] has affirmed that, according to the precautionary approach, States must exercise due diligence both in adopting their measures to contrast climate change and in controlling the conduct of private persons.[69] Therefore, the precautionary approach appears to be an effective instrument to control human activities that are carried out within State jurisdiction, but that may have significant impact on areas beyond national jurisdiction.

Furthermore, the advisory opinions identify some procedural obligations falling within the general duty of cooperation that States must respect at the international and/or domestic level to give effect to the above-mentioned substantive principles.[70]

At the international level, States must cooperate with each other in international fora to adopt effective measures to ensure

[66] *Responsibilities and obligations of States with respect to activities in the Area*, cit., para. 125.

[67] *Request for an Advisory Opinion Submitted by the COSIS on Climate Change and International Law*, cit., para. 213.

[68] International Court of Justice, Judgment of 20 April 2010 on *Pulp Mills on the River Uruguay* (Argentina v. Uruguay), in ICJ Reports (2010) p. 14.

[69] *Obligations of States in respect of Climate Change*, cit., para. 294.

[70] For the relevance of the duty of cooperation for the implementation of the obligation to protect the marine environment against the noxious effects of climate change see T. Smajic, "Climate Change and Deep Seabed Mining: Implications of the COSIS Advisory Opinion", cit., p. 428.

the sustainable use of the environment. Among the measures suggested, particular attention is given to adaptation measures, which, combined with mitigation tools that are aimed at preventing environmental damage, contribute to preserving and restoring the environment for future generations.[71] Adaptation measures also encompass area-based tools, such as the designation of protected areas within fragile ecosystems.[72] The designation of such areas appears to be particularly effective for ensuring the conservation of regions beyond national jurisdiction. For this reason, the ATS has adopted a regime for designating such areas in Antarctica.[73]

At the national level, States can fulfil their duty of cooperation by adopting domestic legislation that is consistent with international obligations and can oblige private parties to respect them. For example, according to the above-mentioned advisory opinions, the obligation to conduct an environmental impact assessment (EIA) does not only apply to States, but also to private actors who are required to carry out EIA when they plan to conduct activities, such as mining in the Area or tourist activities in Antarctica and the Outer space, that could be harmful to the environment.[74]

[71] For the view that Article 192 of the UNCLOS stating the general obligation to protect and preserve the marine environment also includes the duty to adopt adaptation measures, see *Request for an Advisory Opinion Submitted by the COSIS on Climate Change and International Law*, cit., para. 394. In addition, for the view that the Paris Agreement entails the obligation to adopt adaptation measures see *Obligations of States in respect of Climate Change*, cit., paras. 255-259.

[72] For the view that the designation of marine protected areas may be a "realist response strategy to climate change", see *Request for an Advisory Opinion Submitted by the COSIS on Climate Change and International Law*, cit., para. 438.

[73] See Annex V to the PEPAT on Area Protection and Management.

[74] For the view that the duty to carry out EIA procedures is implicit in the concept of precautionary approach see *Request for an Advisory Opinion Submitted by the COSIS on Climate Change and International Law*, cit., para. 353. Some authors believe that the obligation of EIA should also be applied to activities to be carried out in the Outer space, see M. Byers, A. Boley, *Who Owns Outer Space? International Law, Astrophysics and the Sustainable Development of Space*, cit., p. 108.

These obligations, whether of substantive or procedural nature, which are incumbent on States, are closely interconnected with the general interest underlying the protection of the environment for the benefit of present and future generations. In the two advisory opinions relating to climate change, namely the opinions of the International Tribunal for the Law of the Sea and the International Court of Justice, the general interest was represented by the need to protect a good of common concern, such as the climate,[75] through collective action. Besides, in the advisory opinion concerning mining activities in the Area, the Seabed Disputes Chamber has acknowledged the public interest in ensuring the environmental sustainability of such activities, given that the Area and its resources are common heritage of (hu)mankind. For example, when a Sponsoring State exercises its powers of control over private operators intending to carry out mining activities in the Area, that State is acting in the public interest, according to the Seabed Disputes Chamber.[76]

In sum, the general principles highlighted in the three advisory opinions in question entail both the obligation of States to comply with these principles and the duty to oblige private actors to do the same with the aim of safeguarding the public interest.

6. *Enforcing International Obligations in Areas beyond National Jurisdiction*

Commercial activities that affect the environmental integrity of areas beyond national jurisdiction originate either from such areas or from the territory of States. In the latter case, States can exercise their territorial jurisdiction to ensure that the activities of private persons comply with international obligations.

[75] *Request for an Advisory Opinion Submitted by the COSIS on Climate Change and International Law*, cit., para. 122, and *Obligations of States in respect of Climate Change*, cit., para. 440.

[76] *Responsibilities and obligations of States with respect to activities in the Area*, cit., para. 226.

Instead, when such activities take place in areas beyond national jurisdiction, no State and international body can exercise territorial sovereignty. Therefore, private persons operating in such areas may only be subject to the authority of the State of which they are nationals or, in case of vessels, of the State the flag of which they fly. Nationality (and flag State) jurisdiction has already been recognised as an effective jurisdictional link under international law to govern the activities that private persons carry out in all areas beyond national jurisdiction, such as international seas, Antarctica, and Outer space.[77] In addition, the UNCLOS recognises the power of control of Sponsoring States over the private operators with whom they plan to carry out mining activities in the Area. If a similar jurisdictional criterion, based on the factual connection between a State and private operators, were extended to other activities carried out in all areas beyond national jurisdiction, this would ensure more effective control over private actors, particularly when their State of nationality is unaware of the fact that they are organising activities jointly with another State. Similarly, the jurisdictional link recognising the power of control of port States would facilitate the surveillance over private activities that occur in areas beyond national jurisdiction, such as international seas and Antarctica, which may be very remote from the original State of departure. However, the jurisdiction of port States has so far only been recognised over vessels causing marine pollution and illicit harvesting of living resources in the high seas.[78]

[77] As to State jurisdiction based on nationality see Article XI of the Convention on International Liability for Damage Caused by Space Objects. Convention on International Liability for Damage Caused by Space Objects, London, Moscow and Washington, 29 March 1972, United Nations, *Treaty Series*, vol. 961, p. 187. As to flag State jurisdiction see Articles 217 of the UNCLOS and 2 of Annex IV to the PEPAT on prevention of marine pollution. *See also Request for an Advisory Opinion Submitted by the COSIS on Climate Change and International Law*, cit., para. 204.

[78] Articles 218 of the UNCLOS and 23 of the Agreement for the implementation of the provisions of the United Nations Convention on the law of the sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks. Agreement for the implementation of the provisions of the United Nations Convention on the law

According to the three advisory opinions mentioned above, States do not only enjoy the right to exercise their control over private persons, but they also have the obligation to exercise due diligence to ensure that these persons comply with the general principles establishing the environmental sustainability of human activities. For example, with regard to mining in the Area, Article 4(4) of Annex III to the UNCLOS on Basic conditions of prospecting, exploration and exploitation recognises the duty of the Sponsoring States to control the conduct of the private operators with whom they carry out mineral activities.[79]

Therefore, with regard to the environmental sustainability of commercial activities, States do not only have to comply with international provisions requiring them to adopt specific conducts, such as the enactment of appropriate domestic legislation. They are also held responsible for monitoring compliance by private individuals under their jurisdiction with national and international obligations, such as the obligation to carry out EIA procedures.

As affirmed above, all these obligations of States are owed to the international community and humankind, as a whole, by reason of the public interest in preserving the environmental integrity of the planet.

In light of the above, the above-mentioned advisory opinions have also upheld that the duty to ensure the environmental integrity of the planet entails an *erga omnes* obligation towards all States and the international community as a whole.[80] Accordingly, every State has the right to invoke the violation of this obliga-

of the sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks, New York, 4 August 1995, United Nations, *Treaty Series*, vol. 2167, p. 3. See also *Request for an Advisory Opinion Submitted by the COSIS on Climate Change and International Law*, cit., para. 287. For a thorough analysis of port State jurisdiction, see E.J. Molenaar, "Port State Jurisdiction", in *Max Planck Encyclopedia of Public International Law* available at www.mpepil.com, para. 24.

[79] *Responsibilities and obligations of States with respect to activities in the Area*, cit., paras. 199-205.

[80] *Ivi*, para. 180 and *Obligations of States in respect of Climate Change*, cit., para. 442.

tion and to seek cessation and guarantees of non-repetition of such violation under Article 48 of the Articles on the Responsibility of States for Internationally Wrongful Acts, as a non-injured State.[81]

However, in some circumstances, States might act as the injured States of a violation of an international obligation that is owed to all States or a group of States. In fact, under Article 42 of the Articles on Responsibility of States for Internationally Wrongful Acts, this occurs when "the breach of an international obligation is of such a character as radically to change the position all the other States to which the obligation is owed with respect to the further performance of the obligation." For example, if a State Party to the Antarctic Treaty used or allowed private actors to use, Antarctic mineral resources for commercial purposes, for its or their own profit, such breach would undermine the very object and purpose of the ATS, which is to consider Antarctica as a natural reserve devoted to peace and science. Therefore, other States Parties to the ATS could be considered as injured States if they could demonstrate that they have always fulfilled their obligations under the ATS in good faith.

In sum, the public interest underlying the duty to ensure the environmental sustainability of public or private activities in areas beyond national jurisdiction seems to be better safeguarded through the action of States that possess the necessary powers to enforce international obligations both at the domestic and international level.

7. Conclusion

When sustainable development was recognised as a fundamental goal in the Rio Declaration on Environment and Devel-

[81] United Nations General Assembly, Resolution 56/83, 12 December 2001, "Responsibility of States for Internationally Wrongful Acts", A/56/49(Vol. I)/Corr.4. For the limited set of rights of non-injured States in case of breach of *erga omnes* obligations see J. Kammerhofer, "Obligations erga omnes", in *Max Planck Encyclopedia of International Law*, available at available at www.mpepil.com, para. 26.

opment, States believed that it would have been the most effective tool to ensure the environmental sustainability of all human activities in any geographical areas of the planet. Nevertheless, over the past three decades, global environmental degradation has increased dramatically, as demonstrated by the noxious effects of climate change, such as the melting of polar ice, ocean acidification, and sea-level-rise. These detrimental effects have not only affected the environment, but they have also severely disrupted human life. For example, some small Pacific island States are currently at risk of disappearing beneath the sea due to rising sea levels. Along with these islands, their populations and States will lose their territory and the rights associated with it.[82]

The failure of the international community to achieve the goal of environmental sustainability has led some legal and economic scholars to believe that the concept of sustainable development, as formulated more than thirty years ago, is no longer effective in ensuring the protection of the global environment. According to these legal authors, the goal of sustainable development would have required the establishment of a new legal, economic, and social order in which industrial and agricultural production, resource consumption, and way of life should have been aligned with the overall goal of ensuring the environmental sustainability of all human activities.[83] In this regard, some new legal tenets have been conceived, such as the doctrine recognising the autonomous rights of Nature or of some of its components[84] and the theory of ecological law, which upholds that human beings are

[82] For a recent comment to this matter see A. Green, M. Wewerinke-Singh, "State Continuity, Self-Determination and Sea-Level Rise", in *International and Comparative Law Quarterly*, LXXIV (2025), p. 1.

[83] M. F. Strong, "Beyond Rio: Prospects and Portents", in *Colorado Environmental Law Journal*, IV (1993), p. 21, at 26.

[84] The recognition of the theory of the rights of Nature has led some States to declare that components of Nature, such as rivers, lakes and territories, are legal persons. Therefore, under this theory, the rights of Nature should be protected regardless of whether they relate to the interests of a State or a group of individuals. See J. Gilbert, E. Jones, J. Dehm, E. Macpherson, "The Rights of Nature as a Legal Response to the Global Environmental Crisis? A Critical Review of International Law's 'Greening' Agenda", in *Netherlands Yearbook of International Law*, LII (2021), p. 47.

parts of the environment and, therefore, the need to protect the latter prevails over individual interests.[85]

Similarly, some economic scholars have argued that, given the limited availability of resources and energy, the change in the global economic and social system, which is deemed necessary to achieve environmental sustainability, should involve reducing resource and energy consumption through economic degrowth.[86] In this regard, limiting or banning certain human activities, such as tourist expeditions, seems justified when they occur in areas of common interest, such as Antarctica and the Outer space. In fact, these activities, which may significantly damage the environment, are only carried out for the benefit and profit of a few private persons. However, the implementation of the economic degrowth theory, which should be reserved for industrialised countries only,[87] is far from being immediately applicable because, to be effective and equitable, it requires that States and the international community clearly identify their priorities before abandoning the existing economic models.[88]

To respond to these doctrinal criticisms and, more significantly, to address the massive proliferation of certain unsustainable commercial activities, States should adopt effective measures, both at the international and national level. To this end, it is necessary to identify the specific obligations that States and private individuals must respect both within and outside State jurisdiction.

But above all, to ensure environmental sustainability, substan-

[85] The theory of ecological law moves from an anthropocentric to an eco-centric approach that aims at the holistic protection of the environment. See M. Montini, "Revising International Environmental Law through the Paradigm of Ecological Sustainability", in F. Lenzerini, A. F. Vrdoljak (eds), *International Law for Common Goods, Normative Perspectives on Human Rights, Culture and Nature* (Oxford, Hart Publishing, 2014), p. 271.

[86] G. Kallis, C. Kerschner, J Martinez-Alier, "The Economics of Degrowth", in *Ecological Economics*, LXXXIV (2012), p. 172.

[87] For the view that the economic degrowth theory should not be applied to developing countries see C. Okereke "Degrowth, Green growth, and Climate Justice for Africa" in *Review of International Studies*, L (2024), p. 910.

[88] G. Kallis, C. Kerschner, J Martinez-Alier, "The Economics of Degrowth", cit., p. 175.

tive obligations require effective enforcement. With regard to commercial activities carried out in areas beyond national jurisdiction, only States can ensure that private individuals conduct such activities in compliance with international obligations, due to the absence of international bodies capable of ensuring such enforcement in the interest of the international community. In this regard, a State exercising its powers, as a national, flag, or port State, to ensure the environmental integrity of areas beyond national jurisdiction, should not consider extending its sovereign authority over such areas. Rather, it should act as the steward of the public interest upon which the conservation of all areas beyond national jurisdiction is based.[89]

As a matter of fact, the irreversible environmental degradation of areas such as the oceans, Antarctica, and Outer space, due to unregulated commercial activities taking place there, does not only compromise the physical integrity of these areas, but it also jeopardises the ability of the humankind to pass on their uniqueness to future generations.

[89] For the theory of "stewardship" according to which States should act as the stewards of the public interest when they exercise their coercing powers to preserve areas and goods of common interest, see R. BARNES, "Stewardship Beyond the State: Implications for the Regulation of Marine Genetic Resources in Areas Beyond National Jurisdiction", in N. Krabbe, D. Langlet (eds), *Marine Bioprospecting, Biodiversity and Novel Uses of Ocean Resources. New Approaches in International Law* (Oxford, Hart Publishing, 2024), p. 9.