



Blue Planet Law and Ecological Sustainability in the Twenty-First Century

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Abstract

In the twenty-first century, the international community and states face the challenge of reconciling the economic and technological development of our post-industrial societies with the prevention or mitigation of global environmental problems such as climate change, ocean degradation, and biodiversity loss. Nowadays, international environmental law leaves up to the sovereignty of each state most of the measures necessary to prevent pollution, ecosystem degradation, and unsustainable use of natural resources. An important step, together with other international and national efforts, towards the transition to a more globalised and effective environmental law, a Blue Planet Law, will be the approval of the Global Pact for the Environment, which is being discussed at UN level. The Pact, along with other new international environmental conventions, will provide a legal framework that will help promote more effective ecological sustainability and preventive responsibility, considering namely the precautionary principle and intergenerational equity. The development of a Blue Planet Law, a Global Law of the Earth Ecosystem, is as urgent now as Human Rights Law was after the Second

World War, and, in the next decade, it will be a crucial element for international and domestic implementation of the Agenda 2030 UN Sustainable Development Goals.

Keywords

Blue Planet law · Global environmental crisis · Ecological sustainability · International environmental law · Global Pact for the Environment · Global and future oriented responsibility

1 Introduction

One of humankind's greatest challenges in the twenty-first century is to reconcile the economic and technological development of our post-industrial societies with the prevention or mitigation of global environmental problems such as climate change, ocean degradation, and biodiversity loss. The delicate equilibria of the whole biosphere, on which human life, health, food, and well-being depend, are at risk. Therefore, a Blue Planet Law, a new Global Environmental Law, which fleshes out the ecological dimension of sustainable development, is necessary. Our text intends to contribute to overcoming the difficulties of the current international environmental law, in view of the transition towards a new environmental law clearly characterised as “global” and “future-oriented”.

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We will first develop the idea of a Blue Planet Law, in the context of the Anthropocene (Sect. 2). Subsequently, we will demonstrate that the existing International Environmental Law is, for several reasons, insufficient to solve the main problems of the global ecological crisis (Sect. 3). Afterwards, we will defend the urgency of approving the Global Pact for the Environment, which is being discussed at UN level and includes a strong emphasis on the universal duty to take care of the environment and on the principles of prevention, precaution and intergenerational equity (Sect. 4). Finally, we will stress the importance of the role of the Blue Planet Law in strengthening the environmental component of the UN Sustainable Development Goals (Sect. 5).

2 The Idea of a Blue Planet Law in the Twenty-First Century

We are living a new geological age characterised by the physical, chemical and biological impact of human activities on the Planet as a whole: “the Anthropocene” (Crutzen and Stoermer 2000). The Anthropocene is the “age of humans”; “for the first time in our history the most serious and immediate, even existential, risks are human-made and unfolding at planetary scale” (UNDP 2020, p. 20). The relationship between humankind and nature has definitely changed; “the frontiers of the natural and the artificial have become increasingly diluted and everything or almost everything, from the climate to biological diversity” seems to be “under humankind’s power” (Ost 2003, p. 266). With modern technology the “nature of human action has *de facto* changed” and we have acquired an immense power over “no less than the whole Biosphere of the Planet” (Jonas 1985, p. 7); “man has become dangerous not only to himself but to the whole Biosphere” (Jonas 1985, p. 136).

The former geological age, the Holocene, was characterised by a certain stability and equilibrium of ecosystems. The industrial revolution constitutes a turning point in the relationship between humankind and nature. In fact, “with the advent of the industrial society, production,

that is to say the transformation of nature, was considerably intensified in comparison with the previous centuries. For the first time in human history, the relationship between humankind and the natural world would experience a complete rupture” (de Sadeleer 1993, p. 168). Indeed, “all nature today has been shaped by human action or is affected by human activities” (Biermann 2021, p. 65). Moreover, human activities are not always carried out sustainably and consequently they are threatening or endangering the natural equilibria that sustain the life conditions—including human life, health and food—on Earth.

The path of economic, scientific and technological progress after the industrial revolution brought with it increasing human pressure on the planet, which translated to degradation of ecosystems and unsustainable use of natural resources. Ultimately, resources have become limited due to “the growth of human populations and their ever-increasing demands for material goods and economic growth, set against the physical capacity of the planet Earth” (MacCormick 2011, p. 139). Economic and industrial growth has greatly enhanced the quality of human life, but it has also produced new environmental problems, with an international or global impact, such as “climate change and ozone depletion, loss of biodiversity, toxic and hazardous pollution of air and sea, pollution of rivers and depletion of freshwater resources” (Sands and Peel 2019, p. 3).

Our civilisation is dominated by the idea of unlimited economic and technological development, and humankind is endangering the sustainable use of natural resources and the delicate equilibria of the ecosystems and the Earth Ecosystem as a whole. In fact, the techno-economic paradigm is dominated by the “idea of infinite or unlimited growth, which proves so attractive to economists, financiers and experts in technology” (Francis 2015, p. 106). However, the logic of development has overshadowed sustainability standards and the result, as stated above, is massive pollution, hazardous and non-recyclable waste, degradation of air, water and soil quality and unsustainable exploitation of natural resources.

There is a tendency to act as if economic growth and mass use of mechanical, physical and chemical technology will have no negative impact on biodiversity and ecosystems or as if the inherent risks will be a negligible evil. However, the risks of our techno-economic societies are becoming increasingly significant, serious and irreversible, and are producing impacts that are both planetary and long-term.

Thus, a paradigm shift is needed. The dominant economic and technological paradigm must take serious account of ecological sustainability and global ecological responsibility. We must have new economies and new technologies. We must promote eco-friendly economies and eco-friendly technologies, “sustainable” economies and technologies. What is at stake is obviously not simply the strict prohibition of human activities that endanger or damage the environment, but rather the implementation of a complex legal strategy that nudges economic, ethical and political behaviour, supposing scientific knowledge and aiming at certain objectives.

A new kind of law must emerge, a law that takes global ecological sustainability and preventive ecological responsibility seriously, a Blue Planet Law—a global law that does not renounce economic and technological development, but gives sufficient consideration to sustainability standards and human responsibility for the future of the “Earth’s Ecosystem”,¹ the future of this Blue Planet where humankind lives in communion with other forms of life, other living species.

Scientific and technological power and economic industrialisation “manipulate nature and change it according to human will. In doing so, they threaten nature, put it at risk, concur with its degradation and make it more fragile. By making nature fragile, they create a new object of responsibility for humankind” (Garcia 2007, p. 72).

¹ The Convention on Biological Diversity, in Article 2, defines, the “ecosystem” as “a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit”. The “Earth’s ecosystem”, to which the 2017 Draft Global Pact for the Environment refers, includes the interaction and the functional equilibrium of natural elements and human activities.

Human responsibility is no longer simply a responsibility between contemporary and neighbouring human beings; it has also become a responsibility towards nature, distant people and future generations. Law must incorporate this demanding responsibility for the future. And the more fragile nature turns out to be due to the actions of humankind, the greater the latter’s responsibility towards nature should be. Ecological responsibility has a future horizon. Ecological risks and harm must be anticipated and prevented. Our present responsibility is to avoid risks and harm not only in the near future, but also in the long term, in the distant future.

At the root of the global ecological crisis, we find an optimistic vision of nature and natural resources and a utopian vision of technological progress. On the one hand, nature would have an unlimited capacity to absorb pollution and regenerate ecosystems and natural resources. On the other hand, scientific and technological progress would make it possible for humankind to definitively become, in the words of Descartes, “the owner and master of nature” (Ost 2003, p. 43). This incorrect vision of nature and this naive utopianism regarding technological and economic progress have led us, in the first decades of the twenty-first century, to a deep ecological crisis on a planetary scale: the global ecological crisis.

Law must pay serious heed to the notion of the World Charter for Nature that “[hu]mankind is part of nature” (United Nations 1982). Although humans may dominate nature, they also depend on and are part of it, and their life, health, food and well-being depend on its fauna, flora, water, air, soils and ecosystems. Therefore, humans are vulnerable to the risks of destroying the environmental conditions of life on Earth.

The humanised biosphere in which we live is composed not only of “nature”, that is, “realities that were not human-made” (Krebs 2016, pp. 340–341), such as animals, plants, rivers, soils, water and air, or oil, mercury or uranium, but also human activities and human artefacts, such as buildings, means of transport, industrial facilities, and electrical equipment. Humankind has been dominating and transforming nature

since the agricultural revolution, but, as we have seen, in the last two centuries the impact of that domination and transformation has progressed to a completely different scale and is jeopardising the delicate equilibria of the biosphere as a whole.

At the international level two different and powerful ideas can be seen as laying the foundations for environmental protection in the twenty-first century: “sustainable development” and “human rights”. Yet in the sustainable development equation—involving economic, social and environmental development—economic growth has generally prevailed. We must, however, assume that sustainable development does not exist without robust and multiform legal protection of the environment on which human food, life and health depend. On the other hand, the logic of human rights, focused on individual liberty, must be complemented with the logic of necessary human responsibility for the whole biosphere.

Blue Planet Law is a synthetic name for the Global Environmental Law of the Anthropocene, characterised not only by the assumption that economic and technological activities are intrinsically human, but also by the idea that we must take ecological sustainability and global responsibility for the biosphere seriously. Green is the colour usually associated with the environment and environmental protection. We associate green spaces with nature and biodiversity. We speak of an EU Green Deal, of green taxes, green policies and so on. However blue is the colour that better symbolises the holistic and planetary character of the current environmental crisis and the Global Law needed to address it. In fact, some of the most serious global environmental problems of our time are related to the atmosphere and the ocean that make up planet Earth, the Blue Planet. Blue is the most common colour of the skies and the seas as seen from Earth in daylight and it is the predominant colour of our Planet as seen from outer space. And the most severe environmental problems that our technoeconomic societies have to deal with in the twenty-first century have a holistic and planetary dimension. Therefore, the green symbols of environmentalism—plants, trees, recycling

figures—should always be placed inside a blue circle.

3 The Global Environmental Crisis Between International Law and State Sovereignty

International law has to some extent incorporated the concepts of “common concern of humankind” and “future generations” (Bodansky et al. 2012, pp. 10–14). However, international environmental and economic law are still dominated by the idea that states have full sovereignty over their natural resources and territory (Segger and Khalfan 2006, p. 112). Therefore, it is difficult to agree on strictly binding rules or principles, especially regarding pollution and natural resources, not only within the territory of states but also in the “global commons”.² Environmental common goods such as the climate or biodiversity are in fact recognised by international treaties as a “common concern of humankind” (Brunnée 2007, pp. 557–567; Dupuy and Viñuales 2019, p. 98), but their protection remains essentially dependent on the sovereignty and goodwill of the states.

Binding treaties setting out strict duties and obligations in environmental issues are often difficult to obtain, mainly because environmental protection always has an economic cost and states are not always willing to bear or impose that cost in their economies. On one hand, “big corporations and multinationals in developed countries are reluctant to adopt [eco-friendly equipment and measures] for fear that their production costs may dramatically soar or bring about a decrease in their competitiveness”. On the other hand, “developing countries assert that, given their backwardness and poverty, they cannot afford to improve their conditions, unless they receive considerable financial [and technological] assistance from industrialized states” (Cassese 2005, p. 486). Moreover, the economic advantages of the “green economy” and the

² On the “global commons”, Bell et al. (2017, p. 142).

“blue economy” are not sufficiently decisive, because the “transition” implies high financial costs for companies and states.

International environmental law is to a large extent “soft law”³—formally non-binding law, non-coercive law—although it might have some “legal effects”, as typically happens with UN Conference Declarations and General Assembly Declarations (Boyle and Redgwell 2021, pp. 33–35). One very specific form of international soft law, as previously noted, is “Declarations” (Christiano 2015, p. 381), such as the 1972 Stockholm Declaration, the 1982 World Charter for Nature or the 1992 Rio Declaration, which enshrine a set of environmental law “principles”. Another form of soft law is included in UN General Assembly Resolutions, such as the 2030 Agenda for Sustainable Development, which enshrines 17 Sustainable Development Goals (SDGs), including responsible production and consumption (SDG 12), climate action (SDG 13), and the preservation of life below water (SDG 14) and life on land (SDG 15).

Soft law instruments often act as a first step towards the subsequent adoption of international treaties or customary practices. An example of a soft law principle that has become customary binding law is the prevention principle “inferred” from the Stockholm Declaration (Principle 21) and the Rio Declaration (Principle 2) (de Sadeleer 2021, p. 88). Soft law principles have a symbolic effect and, as mentioned above, often pave the way for political and diplomatic efforts to adopt binding treaties, as well as providing standards to be applied in case law. For instance, the precautionary principle enshrined in the 1992 Rio Declaration (Principle 15) was included in the 1992 Framework Convention on Climate Change and in the Preamble of the 1992 Convention on Biological Diversity, and it was also later the leitmotif of the Cartagena Protocol on Biosafety, which regulates biotechnology. It has likewise influenced the case law of the International Tribunal for the Law of the Sea and of the WTO Dispute Settlement Bodies

(de Sadeleer 2021, p. 138), and even the case law of the European Court of Human Rights (Dupuy and Viñuales 2019, pp. 72–73). However, soft law is, by definition, non-binding law in written form. It has a directive, guiding function, rather than strictly normative binding force.

Furthermore, although there are around 500 environmental law treaties (Aguila 2020, p. 9), many gaps remain, and treaties often have weak levels of ‘bindingness’.

The 2018 UNSG Report “Gaps in international environmental law and environment-related instruments: towards a global pact for the environment” identifies various “issues as remaining without specific, legally binding regulation by international treaties”, such as “the conservation and sustainable use of forests, pollution of marine areas by land-based plastic debris, protection of biodiversity beyond national jurisdiction, the protection of soils, regulation of the use of pesticides, regulation of noise pollution, protection of the Arctic environment, a human right to biological diversity, regulation of nanomaterials” (Voigt 2019).

Moreover, and principally, “the legal ‘bindingness’ of a treaty provision depends on many factors”, including: (i) “Where it occurs—in the preamble or operative part of an agreement”; (ii) “Who the provision addresses—states, collectively or individually, or others”; (iii) “Whether it uses mandatory or recommendatory language;” (iv) “How precise it is”; (v) “What institutional mechanisms exist for transparency, accountability, and compliance” (Bodansky et al. 2012, pp. 18–19). And the truth is that for the most important issues in international environmental law—such as climate change, biodiversity loss, ocean degradation—“framework agreements” prevail and there are usually no judicial procedures to deal with cases of non-compliance, only “supervisory and preventive mechanisms” (Cassese 2005, p. 487).

Let us see how international law currently deals with the main problems of the global ecological crisis: climate change, ocean degradation and biodiversity loss, including natural resources depletion.

³ On *soft law* instruments in international environmental law, Dupuy and Viñuales (2019, pp. 40–41).

The most visible side of the global ecological crisis in the Anthropocene is climate change. Climate change implies atmospheric warming, extreme weather events and destruction of habitats needed for biodiversity. The Earth's temperature has increased 0.99% since the beginning of the industrial revolution and in the last 50 years has increased faster than in any 50-year period in the last 2000 years (IPCC 2021, p. 5). This leads to a variety of different risks and constitutes a serious global problem. The 2021 Glasgow Agreement "recognizes that the impacts of climate change will be much lower at the temperature increase of 1.5 °C compared with 2 °C [above pre-industrial levels]".⁴ A very small difference in temperature makes a huge difference in the impacts of climate change—"a little is a lot" (Gates 2021, pp. 20–30).

Climate changes are the result of an alteration in the chemical composition of the atmosphere, more precisely, of an excess of greenhouse gases (GHGs) in the atmosphere, such as carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). According to the IPCC: "In 2019, atmospheric CO₂ concentrations were higher than at any time in at least 2 million years (high confidence), and concentrations of CH₄ and N₂O were higher than at any time in at least 800,000 years (very high confidence)" (IPCC 2021, p. 4). The causes of this excess are many, but it is possible to synthesise them. The basic idea may be reduced to an imbalance between GHG emissions and GHG sinks. The main cause of GHG emissions is the use of fossil fuels: "Electricity generation, heat production and transport rely heavily on fossil fuels and together account for roughly 70 per cent of global greenhouse gas emissions" (United Nations 2019, p. XXVI). Food production, especially bovine livestock and intensive agriculture, is responsible for around 18 to 19% of GHG emissions (Gates 2021, p. 55; Martins-Loução 2021, p. 36). On the other hand, GHG sinks are decreasing mainly due to deforestation, but also due to the loss of marine biodiversity.

The 1992 UN Framework Convention on Climate Change (UNFCCC) considers a stable climatic system a "common concern of humanity" and recognises that it "must be preserved through the control of anthropogenic interference in the atmospheric composition". However, the ultimate objective of the convention simply requires the adoption of measures by each state individually or in cooperation with other states. The 2015 Paris Agreement is more specific. The parties agree to reduce their carbon emissions, "holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change".⁵

However, this is only a "collective goal" and does not include specific targets for each state individually. In fact, it is up to each state to determine its "nationally determined contribution" (NDC) (Bodansky et al. 2017, pp. 231–236) to climate change mitigation. And, naturally it is also up to states to determine the specific legal measures to be adopted at the national or domestic level, such as the taxation of fossil fuels ("green taxes") or the provision of subsidies to "renewable energies", namely solar, wind and wave energy, or "green hydrogen" (which can be produced from ocean waters). Moreover, and consequently, the Paris Agreement foresees an "expert-based facilitative committee" to facilitate implementation of and promote compliance with the Agreement, but states that this mechanism should function in a "non-adversarial and non-punitive manner".⁶

Another dimension of the global environmental crisis in the Anthropocene is ocean degradation. The ocean is the world's largest ecosystem, covering almost three-quarters of the Earth's surface. This planetary ecosystem is a source of living resources (fish, algae, and marine genetic resources) and is an essential part of the Earth's

⁵ Paris Agreement, Article 2/1/a. See also Bodansky et al. (2017, p. 229).

⁶ Paris Agreement, Article 15. See again Bodansky et al. (2017, p. 246).

⁴ Glasgow Climate Pact, n. 16.

life support. The ocean absorbs 25% of the CO₂ emitted by our fossil-fuel-based and industrialised economies, as well as 90% of the heat generated by that CO₂ and other greenhouse gases, but this represents “a triple threat to the ocean causing it to become warmer, more acidic and to store less oxygen”, and it has a “substantial impact on the working of its biological systems” (Oceano Azul Foundation 2021, p. 21). Furthermore, global warming leads to a rise in sea levels, which implies not only the flooding of riverside cities and beaches but also the destruction of ecosystems in large river estuaries. Overfishing is endangering many species. In addition, the ocean has functioned as the world’s dump, into which non-biodegradable residues are thrown, including gigantic amounts of plastic. Wastewaters from urban centres and waters containing hazardous substances from industries and pesticides from agriculture also flow into the ocean. These chemical substances not only degrade the ocean’s water quality but also enter into food chains, affecting biodiversity and eventually human health and food safety.

The 1982 UN Convention on the Law of the Sea (UNCLOS) determines that states have the duty “to preserve and to protect the marine environment”⁷ and that states “shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation”.⁸ These two provisions represent a “paradigm shift” (Tanaka 2015, pp. 265, 276) in the law of the sea since they recognise an explicit obligation to prevent pollution in the whole ocean and the obligation to take appropriate measures to preserve and manage natural resources within each exclusive economic zone (EEZ). However, international and national efforts “have not prevented the further deterioration of the oceans, the over-exploitation or depletion of marine species and the

destruction of natural marine habitats” (Sands and Peel 2019, p. 565). Moreover, the ocean is subject to the “tragedy of the commons”. In fact, unrestricted freedom of the seas still prevails in the High Seas as the new treaty on biodiversity beyond national jurisdiction (BBNJ)—which has been promised since 2015—is still being negotiated (Sands and Peel 2019, p. 565), and the establishment of EEZs in 1982 by the UNCLOS has also not prevented the tragedy of the commons in the areas under national jurisdiction,⁹ because generally states do not have an extensive and adequate system of marine protected areas and fisheries management.

The other major global problem of the ecological crisis of our time is biodiversity loss (whether on land or in the ocean and rivers). This biodiversity loss also means a loss of natural resources: living and genetic resources. The reasons for protecting biodiversity are several: “First, biodiversity provides an actual and potential source of biological resources including, for example, for use as food and feed, as well as pharmaceutical, industrial and other applications [such as biotechnology]. Second, biodiversity contributes to the maintenance of the biosphere in a condition that supports human and other life. [...] Third, biodiversity conservation may be based on ethical, intrinsic, aesthetic and cultural considerations” (Sands and Peel 2019, p. 385). However, every year thousands of species of plants, animals and micro-organisms become extinct. According to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), “An average of around 25 per cent of species in assessed animal and plant groups are threatened, suggesting that around 1 million species [out of 8 million] already face extinction, many within decades, unless measures are taken to reduce the intensity of biodiversity loss. Without such action, there will be a further accelera-

⁷ UN Convention on the Law of the Sea, Articles 192 to 194.

⁸ Ibid Article 61, no. 2.

⁹ I disagree therefore with the idea that the creation of EEZs by the UNCLOS prevented the tragedy of the commons in the ocean, as defended by Bell et al. (2017, p. 142).

tion in the global rate of species extinction, which is already at least tens to hundreds of times higher than it has averaged over the past 10 million years” (IPBES 2019, p. 4).¹⁰ Scientists talk about a “sixth mass extinction” caused not by a natural event but by human action, by the impacts of our techno-economic civilisation. The problem lies mainly in the destruction and fragmentation of habitats where fauna, flora and micro-organisms live and develop. This degradation of habitats is associated with pollution, the expansion of urban and agricultural spaces, climate change, invasive species, and overexploitation of natural resources, including deforestation. Not even the great sanctuaries of biodiversity, namely the tropical forests (the Amazon or Congo river basins) and the coral reefs (which shelter around 1/4 of all marine biodiversity) escape this destruction.

The Convention on Biological Diversity (CBD) recognises, in its preamble, that the “conservation of biological diversity is a common concern of humankind”, but it also affirms that “States have sovereign rights over their own biological resources” and that they “are responsible for conserving their biological diversity” (Dupuy and Viñuales 2019, p. 98), that is, the habitats and the species within their territory. Thus, the measures adopted for the conservation of biodiversity and biological resources depend essentially on the goodwill of each state. There are supranational efforts to protect ecosystems such as the Habitats Directive within the European Union, but there is no international control of the domestic implementation of land and marine protected areas. There is, in particular, an important UN project for a Global Agreement for Biodiversity, within the normative and institutional framework of the CBD, that proposes specific targets. These include the objective of “at least 30 per cent globally of land areas and of sea areas [...] conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected

areas [...]” (Target 3) (UN Environment Program 2021, p. 6). Nevertheless, although this project constitutes an important step, an agreement is yet to be adopted, and the proposed goal is only a collective global goal, it remaining essentially up to each state to determine the domestic measures to be taken in order to contribute to that goal¹¹ and eventually the future negotiation of more specific international treaties on biodiversity protection.

Rachel Carson, the famous biologist and ecologist, warned us that “in nature nothing exists alone” (Carson 1964, p. 35). The same message has been purveyed by Pope Francis: “everything is interconnected [...] Just as the different aspects of the planet – physical, chemical and biological – are interrelated, so too living species are part of a network which we will never fully explore and understand” (Francis 2015, p. 138). Carbon and water cycles are global. Food chains and ecosystems have complex and delicate balances that can be affected by the introduction of a single polluting substance or by the extinction or rarefying of a single plant or animal species. Furthermore, in the Anthropocene, global environmental damage and losses often become cumulative and in many cases are irreversible, with dramatic consequences for future generations. The irreversible destruction of biodiversity has implications—as seen above—not only for the planet’s beauty, but also for food and human health. Indeed, greater diversity within ecosystems equates to their greater resilience, fewer risks to their survival and a greater variety of food and genetic resources, namely for biotechnology and pharmaceutical applications. In turn, climate change can have tremendous consequences in terms of the destruction of ecosystems and fauna and flora, and also directly affect the quality of people’s lives, as they increasingly become victims of droughts, high temperatures, forest fires and natural disasters.

Moreover, there is also the risk that the impact of human activities is steering the dynamics of the Earth ecosystem as a whole towards “tipping

¹⁰ See also IPBES (2019, p. 15), which includes a figure with the “current global extinction risks by groups of species”.

¹¹ On the different kinds of legal measures to protect biodiversity, Sands and Peel (2019, p. 386).

points” beyond which the negative consequences of environmental degradation become exponential and unstoppable—one may think of the melting of the polar ice caps on Greenland and the Antarctic. Finally, let us not forget that in the global ecological crisis it is not only air quality, climate, water and the intrinsic value of biodiversity that is at stake. Eventually, the severity of the global environmental crisis may also present a risk to humankind itself, that is, to human beings as biological, psychological and spiritual creatures, who have the right to life, food, health and a balanced and healthy environment.

4 The Global Pact for the Environment and the Universal Duty to Take Care of the Earth Ecosystem

In 2017, a group of over 100 world experts in environmental law, international law and sustainable development came together to prepare a Draft Global Pact for the Environment (DGPE) in 2018, this project was taken to the United Nations General Assembly and 143 countries voted a Resolution according to which negotiations should begin to transform this DGPE into an “international instrument” (Resolution of the United Nations General Assembly 2018) (only 5 countries voted against). This “international instrument” is to be a treaty, not simply a soft law instrument. In fact, the DGPE is explicitly a treaty proposal to be signed and ratified by the Parties,¹² including states and probably other entities such as the European Union.

The DGPE includes within its scope the main global environmental problems—climate, ocean and biodiversity—and unifies and systematises the international environmental law within a global law approach. It might be said that the Global Pact for the Environment (GPE) will be a keystone in the transition from classical international environmental law to a Global

Environmental Law. In fact, approval of the GPE will consecrate a human right to an ecologically sound environment and a universal duty to take care of the environment that is addressed not only to every state and other international entities, but also to all other public and private, natural and legal persons. The Pact also enshrines the fundamental legal principles of environmental law that are supposed to be applied globally, that is, although in different ways, not only at the international level, but also at the domestic level.¹³ Furthermore, the GPE will establish implementation mechanisms that point to a “global warrant”, constituted by global or common practices that are not dependent on the territory of each state (Walker 2015, pp. 18–24). Finally, the GPE also intends to be global law in the sense that it concerns humankind as a whole, including future generations (Domingo 2011, p. 105).

The GPE will have a gravitational effect on all the existing environmental law and will clearly affirm the paradigm shift needed in environmental law. Firstly, it will recognise the global character of environmental law, by consecrating the human right to a sound environment and the universal duty to take care of the environment. Secondly, it will clearly establish a future-oriented environmental law based on the principles of prevention, precaution, and inter-generational equity. Thirdly, the implementation mechanisms of the GPE will operate not only at the international level but also at the domestic level. Let us now see in more detail how the GPE takes a decisive step in the legal paradigm shift that is necessary in the context of the global environmental crisis.

The first novelty brought by the DGPE is the consecration of the “right to an ecologically sound environment”. According to Article 1, “Every person has the right to live in an ecologically sound environment adequate for

¹² See Draft Global Pact for the Environment, Articles 23 to 26.

¹³ See Walker (2015, pp. 15, 71–86) on global law and the overcoming of the “Westphalian duo of national and international”. See also *ibid.* 71–86 on the global character of human rights.

their health, well-being, dignity, culture and fulfilment”.

Today the right to a healthy or sound environment is already directly protected in around one hundred national constitutions (Knox 2020, p. 83; Boyle and Redgwell 2021, p. 295), after the Portuguese Constitution¹⁴ consecrated it for the first time (Bodansky et al. 2017, p. 303, fn. 38) in 1976, in the wake of the 1972 Stockholm Declaration.¹⁵ At the international level, the 1998 Protocol of San Salvador and the 1981 African Charter on Human and People’s Rights lay down, respectively, a “right to live in a healthy environment” and a “right [of all peoples] to a generally satisfactory environment favourable to their development”. Nevertheless, there is no universal proclamation of a human right to a sound environment at the level of United Nations law (Knox 2020, p. 81). The universal consecration of a human right to a sound environment in the GPE will have a strong symbolic, normative and institutional impact in environmental law, representing in itself, to a certain extent, a displacement from the existing prevailing anthropocentric approach to a more ecocentric approach. In fact, the right to a sound environment supposes that the protection of the environment becomes direct, rather than simply indirect, i.e., dependent on the “greening” of other human rights, such as the rights to life, health, private life or property.¹⁶ Moreover, the inclusion of the “environment” within the field of human rights brings the seal of legal universalism to a globally fragmented environmental law.

It is, however, true that the logic of human rights, focused on the human dignity of each person, is difficult to apply to the protection of animal and vegetal species or even to the protection of future generations (Bodansky et al. 2017, p. 300) or of humankind as a whole. However, the GPE will also consecrate a universal duty to take care of the environment. This duty to take care of

the environment is the keystone of the GPE. The basic underlying idea is that, although nature has no rights, everyone has a “duty to take care of nature”, and that presupposes “the care for humankind that comes after us [and] the care for everything that our Planet includes in its own constitution” (Kaufmann 1993, p. 382).

According to the DGPE, “Every State or international institution, every person, natural or legal, public or private, has the duty to take care of the environment. To this end, everyone contributes at their own levels to the conservation, protection and restoration of the integrity of the Earth’s ecosystem”.¹⁷ The DGPE explicitly enshrines a universal “duty to take care of the environment” and the object of this duty to take care is also global. The environment is understood to be the “Earth’s ecosystem”, including climate, ocean and biodiversity.

This duty, as stated above, is the very core of the GPE, and is unpacked into different principles of ecological responsibility, of which we will only highlight those that embody the future-oriented responsibility that the GPE intends to strengthen: the principle of prevention, the precautionary principle and the principle of intergenerational equity.¹⁸

The GPE makes absolutely clear that the ecological responsibility that is at stake in the “risk society” of the Anthropocene is decisively an *a priori* responsibility rather than an *a posteriori* responsibility: it is a responsibility to avoid damage or losses before they occur. The reasons underlying this approach are easy to understand. The reparation of environmental damage is often difficult or highly expensive. Moreover, “there are hazards which, if they occur, would mean destruction on such a scale that action [or reparation] afterwards would be practically impossible”. Therefore, we must “become active today in order to prevent, alleviate or take precautions against the problems and crises of tomorrow and the day after tomorrow” (Beck 1992, p. 30). Economic activities and mechanical

¹⁴ Article 66.

¹⁵ On the impact of the Stockholm Declaration on national constitutions, Birnie et al. (2009, p. 275).

¹⁶ On the “greening” of human rights, see Boyle and Redgwell (2021, pp. 302–307).

¹⁷ Draft Global Pact for the Environment, Article 2.

¹⁸ Draft Global Pact for the Environment, Article 4, 5 and 6; Rio Declaration, Principle 15.

and chemical technologies, using energy and substances that produce pollution, waste or environmental risks to habitats and species, must be ecologically sustainable and carried out with a sense of ecological responsibility towards the future.

The prevention principle has a strong formulation in the GPE. The GPE speaks categorically of the “necessary measures” to prevent environmental harm, thus pointing to the idea that the principle of proportionality, although relevant, has a limited capacity to moderate the prevention principle.

Prevention of environmental harm—and the need for preventive measures such as the setting of thresholds, environmental impact assessments or the use of the best available technology (de Sadeleer 2021, pp. 125–132)—always has an economic cost that must be balanced, to a certain extent, with environmental values. Conducting environmental impact assessments, to protect fauna, flora and ecosystems, or adopting the best available technologies in industries and transportation, to avoid pollution, is costly. Sustainable use of natural resources or protection of a habitat by means of a land or marine protected area implies deprivation of immediate economic profits. However, any cost-benefit analysis must be limited when applying the prevention principle because many of the environmental impacts of human activities “are, by their nature, non-monetary or non-quantifiable, at least not in any reasonably accurate way – for example, how much is a human life, an ecosystem, a species, a view of a mountain range, or a national park worth in monetary terms, both now and in the future?” (Magraw and Hawke 2007, p. 636).¹⁹

The GPE will also expressly consecrate the precautionary principle as a principle of global law (nowadays, the principle is not always recognised, in international and comparative terms, as a binding legal principle). Article 6 of the DGPE determines that “Where there is a risk of serious or irreversible damage, lack of

scientific certainty shall not be used as a reason for postponing the adoption of effective and proportionate measures to prevent environmental degradation”.²⁰

The precautionary principle is rooted in the idea that “today’s choices must also reflect a still uncertain future”. It “is therefore justified by consideration of the long term” (de Sadeleer 2021, p. 19). Anticipatory measures are justified even in the context of scientific uncertainty or doubt about the future consequences of a certain human action, activity or omission—for instance, the use of a chemical substance, a persistent organic pollutant, an energy source, a genetically modified organism (GMO) or any other biotechnology, as well as the non-adoption of measures to protect a species or a habitat.

The precautionary principle is linked to the emergence of “post-industrial risks”, risks that are “more global (ozone depletion, climate change) than local (pollution of the Great Lakes)”, risks that “may give rise to damage outside the realm of commerce (e.g., to human health) and thus be impossible to evaluate” and risks that “are permeated with unquantifiable uncertainty” (de Sadeleer 2021, pp. 13 and 273–274). The uncertainty or doubt might relate to the good that is affected (human health, biodiversity, climate) and the seriousness, duration and scale of the damage (de Sadeleer 2021, p. 275). Precautionary measures (banning of substances or technologies, pollution thresholds, best available technology, species protection) are justifiable when there are “grounds for concern”, that is, when “it is not unreasonable to anticipate the occurrence” of a risk “on the basis of certain data or hypotheses, even if those data have not yet been fully validated” (de Sadeleer 2021, p. 287). The precautionary principle imposes a burden of proof on potentially damaging economic activities and technologies in favour of environmental protection (*in dubio pro natura*). If the possible environmental harm is serious or irreversible, public authorities do not need conclusive scientific proof of the risks (de Sadeleer

¹⁹ On the difficulty of “costing the earth”, Bell et al. (2017, p. 52).

²⁰ Draft Global Pact for the Environment, Article 6; Rio Declaration, Principle 15.

2021, pp. 335–336) in order to restrict economic or technological activities. It is enough to show that there are “grounds for concern”.

The GPE will also explicitly consecrate the principle of intergenerational equity: “Present generations shall ensure that their decisions and actions do not compromise the ability of future generations to meet their own needs”.²¹ This principle standardises the universal and global duty to take care of the environment and the idea of ecological sustainability, including the sustainable use of natural resources, placing that duty in the context of the long-term horizon of humankind as a whole, including future generations.

The principle of intergenerational equity is linked to the idea of “irreversibility”, but also to the idea of “difficult reversibility” at least in the next generation. The notion of intergenerational equity underlies some treaties, such as the 1992 Convention on Biological Diversity and the 1992 Framework Convention on Climate Change, which have “the avoidance of irreversible harm” (Boyle and Redgwell 2021, p. 122) as their main purpose. It also underlies treaties on fish stock conservation, such as the 1995 Agreement on the Conservation of Straddling and Highly Migratory Fish. However, a fundamental legal principle, such as the principle of intergenerational equity, always goes beyond its specific positive implementations.

The basic idea underlying this principle is the following: “if the human beings now alive continue to deplete resources at current rates of depletion, the next generation or generations will face severe shortages [. . .]. If the human beings now alive continue to tolerate the levels and kinds of environmental degradation that became common during industrialization and after it, this will in other ways impoverish future generations” (MacCormick 2011, p. 140). According to the principle, “renewable resources should be used in such a way that they keep the capacity of recovering or growing again; non-renewable resources should be saved; the natural equilibria

in their own dynamic should be respected, this is particularly important concerning the climate” (Holzleithner 2009, p. 67); finally, non-recyclable waste, such as plastic waste or nuclear waste, should be minimised or avoided.

This principle is primarily focused on human “needs”. However, the concept of “need” does not necessarily mean economic needs, and therefore may be related to the concept of “value”, including “value of existence” and “value of option” (Roser 2016, p. 407). In this meaning the “needs of future generations” might include, besides natural resources, not only human rights (Roser 2016, p. 408), such as life, health, food or housing, but also needs satisfied by “the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components”, as well as by the “life sustaining systems of the biosphere” (United Nations 1992). Given that the conditions of human life depend on the biosphere and that biodiversity and the whole biosphere have scientific, cultural, recreational and esthetical value, the difference between the protection of future generations and the protection of nature must be heavily played down (Ost 2003, p. 296).

Having seen the preventive and anticipatory approach of ecological responsibility and sustainability presupposed by the DGPE, it is essential to see how the DGPE promotes its own global implementation, namely through a complex strategy carried out by states and other entities that includes not only legal measures but also market mechanisms and scientific research and education.

First of all, states and other entities such as the European Union must approve legal measures in order to prevent environmental damage, losses, and risks, for instance, the classification of land and marine protected areas, fisheries management, banning of coal-produced electricity or setting of carbon emissions thresholds. They must also “encourage” companies and citizens—namely through market mechanisms—to fulfil their duty to take care of the environment, for instance, with green taxes on fossil fuels or plastics, subsidies for renewable energies or

²¹ Draft Global Pact for the Environment, Article 4.

ecolabels for sustainable seafood. States and other similar entities, such as the European Union, must also provide access to environmental justice and promote environmental scientific research and education. At the international level, the DGPE provides a non-adversarial and non-punitive implementation mechanism based upon a Committee of experts and obviously presupposes not only international cooperation but also all the legal and institutional means provided by the hundreds of multilateral treaties or agreements directly or indirectly related to environmental protection.

Is the GPE the appropriate framework to unify and systematise the ideal and the reality of a Blue Planet Law, understood as the Global Law of the Earth Ecosystem?

Kotzé and French argue that the GPE should adopt a more ecological and less anthropocentric approach. According to the authors, the word “environment” is linked to the prevailing anthropocentric approach that underlies international law instruments such as the Rio and Stockholm Declarations that “have been unsuccessful in juridically extending greater care to the non-human world”. They say the GPE should be named the “Global Pact for the Earth System” or simply the “Global Pact for Earth”, invoking the World Charter for Nature’s imagery of a “caring Mother Earth” or “nurturing nature” or the Earth Charter’s “Earth as our home” (Kotzé and French 2018, p. 819).

It is true that the word environment, including “air, water, soil, flora, fauna, ecosystems, and their interaction” (Boyle and Redgwell 2021, pp. 208–214), gives the idea that these elements are simply something “around” human beings, whereas the word “Earth system” or “caring Mother Earth” would give the idea of something in which human beings are included as an integral part. However, the DGPE assumes, in our opinion, a more strongly ecological approach than traditional environmental law.

In fact, as we have seen, at the centre of the DGPE is not simply the human right to a healthy and sound environment but rather the duty to take care of the environment. And this duty of care towards the environment is established by

reference to holist and planetary entities such as “biodiversity”, “ocean”, “climate”, “future generations” and the “Earth’s ecosystem”.²² Obviously, we may say that what is ultimately at stake is humankind as a whole, but there is no doubt that the reference to the “Earth’s ecosystem” points to the biosphere as a whole, on which human beings—that is, human life, health, food and well-being—depend. The DGPE presupposes “recognition of the interdependence of humanity and the entire natural world”, which already underlies the 1992 Conventions on Biological Diversity and Climate Change (Boyle and Redgwell 2021, pp. 8–9), and which is exactly the holistic approach that we must develop with the Blue Planet Law of our economic and technological world.

5 Sustainable Development and the Challenges of a Blue Planet Law

Economic growth, the increase in the production of goods and services, industrialisation, and the global wealth of nations promote human well-being. However, economic growth must be financially and economically sustainable in the long run. Furthermore, economic growth is not an end itself; an increase in GDP per capita is not all that matters.²³ Economic growth must also be socially and environmentally sustainable: it must consider “social development (including human rights)” and “environmental development (including human health)” (Magraw and Hawke 2007, p. 614). In fact, societies must tackle—with a “freedom-oriented perspective”—hunger, poverty and gender inequality, and no one must be deprived of basic goods such as health care or education (Sen 1999, pp. 13–34, 282–290). Moreover, societies and the world community must preserve the biosphere, biological diversity

²² See the definition of the “holistic approach” in Seelmann and Demko (2019, pp. 266–267).

²³ See Nussbaum (2011, pp. 46–68), speaking of a “necessary counter-theory” against the exclusive “GDP approach”.

and ecosystems, as the life support on which human health, food, and well-being depend. In short, sustainable development means long-run sustainable economic growth compatible with social equity and environmental responsibility.

The 2030 Agenda for Sustainable Development, which we have already mentioned, enshrines 17 Sustainable Development Goals (SDGs). Four SDGs are directly and strictly associated with the duty to take care of the environment: sustainable production and consumption patterns (SDG 12), climate action (SDG 13), preservation of life below water (SDG 14) and preservation of life on land (SDG 15). Other SDGs are also more or less connected to environmental protection. It is obvious, for instance, that the development of renewable energies (SDG 7) is decisive in mitigating climate change (although production of these may have other environmental impacts). There are also other less obvious but significant interactions. For instance, gender equality (SDG 5) and the empowerment of women in developing countries would reduce demographic pressure on the planet and thus contribute to mitigating climate change and preventing the destruction of habitats (Sen 2010, p. 249).

Sustainable development is related to international economic law, international law related to social development, especially human rights, and international environmental law (Segger and Khalfan 2006, p. 51). However, it also includes a national legal dimension. The above-mentioned sustainable development goals are related to both international and domestic environmental law. The latter plays an important role in achieving the environment-related sustainable development goals, which, in order to better guide social and economic activities, must assume legal form. Ecological sustainability depends on social, political, and economic behaviour, but also on the establishment of legal rules, principles, and objectives. What do our societies need in order to move towards more robust environmental legal protection in the context of eco-friendly economies and technologies? In other words, what do we need to step into a Blue Planet Law?

First of all, it is important to approve the Global Pact for the Environment (GPE). As we have seen, the GPE would consecrate at UN level the human right to an ecologically sound environment and, especially, the universal duty to take care of the environment. It would also codify and systematise in a single document the core principles of global environmental law. It could “provide a ‘toolbox’ for the general improvement of international environmental law and the enhanced effectiveness of environmental protection” (Voigt 2019, p. 22). In fact, “a Global Pact would confer rights, obligations and duties [...] thus catalysing effective participation and action for environmental protection. A Global Pact could be a guiding compass for all actors in society—citizens, businesses, and states. For citizens and NGO’s a Pact would provide new guarantees and strengthen their capacity to assert their environmental rights before national courts. For corporations, a Pact would create a level-playing field and provide more predictability and legal security, which are crucial for making long term investments. For governments, a Pact would provide a basis to create new legislation” (Aguila 2020, p. 9). The GPE will be the centre and the catalyser of the Global Law of the Earth Ecosystem.

Moreover, two important international conventions should be adopted: the treaty of the High Seas (Treaty on Biodiversity Beyond National Jurisdiction), which would complement the UN Convention on the Law of the Sea, and a Global Agreement on Biodiversity Protection, as an additional supplement to the Convention on Biological Diversity (UN Environment Program 2021, p. 6). It is also vital that the targets of the Paris Agreement are taken seriously by states, and especially by the most developed or populated countries.

However, the main effort must be made at a national level or at the level of supranational entities such as the European Union. States establish by law environmental standards concerning CO₂ emissions or the use of pesticides; they organise the spatial planning of their territory and classify land and marine protected areas; they regulate eco-friendly market mechanisms such

as green taxes, subsidies or ecolabels (Segger and Khalfan 2006, pp. 89–90). All this must have an international and global framework, but its effectiveness is always heavily dependent on the states themselves.

The law of the Anthropocene must promote eco-friendly economies and eco-friendly technologies.²⁴ It is true that nature has its own mechanisms. For instance, no technology is as efficient as the forests and a healthy ocean in sinking CO² and mitigating climate change, and, generally, the best way to protect an animal or vegetal species is simply to protect or preserve its habitat. However, economic and technological development will not stop, and the world obviously does not want to return to the pre-industrial age. Therefore, economic and technological developments have to acquire a new direction: we need ecologically sustainable policies, economies and technologies. And we need sustainable development informed by a holistic, intergenerational and precautionary approach (Magraw and Hawke 2007, pp. 628–632).

6 Conclusion

Ecological responsibility and sustainability are as urgent in the twenty-first century as individual rights and freedoms were in the second half of the twentieth century. If, as we believe, there are universal legal values, they are no longer represented only by human rights. Human Rights Law must be complemented by an Earth Ecosystem Law, a Blue Planet Law.

Blue Planet law is, as we have said, the law of a humanised biosphere, and it is more or less equivalent to what Kotzé designates the “Earth System Law” (Kotzé 2019). Nevertheless, our approach is a little different, since we believe that we cannot completely abandon a human-centric approach and, therefore, we are more optimistic regarding the DGPE, believing that it

can and will be a keystone towards a Blue Planet Law, the law of the humanised biosphere. Blue Planet Law is the Law of the Earth Ecosystem, of the techno-economic civilisation, that incorporates the just demands of ecological responsibility or sustainability.

The Law of the Anthropocene must be based on a universal duty to take care of the environment that is not synonymous with a human right to a healthy environment. This new law has a new object: the humanised biosphere, the Earth Ecosystem composed of the atmosphere, water, soil, fauna, flora, and all this together in a complex network of interactions with humans. The Law of the Anthropocene must not forget that humans are economic and technological beings (*homo economicus*, *homo faber*), but must assume the equilibrium of humankind and nature as a supreme international, political and legal goal.

We need a Blue Planet Law, an Earth Ecosystem Law. This Blue Planet Law is, as we have said, beyond Human Rights Law. It has a different object. Its object is not to protect persons, as individuals, as free and equal beings; it aims rather to protect humankind, the common good and the biosphere. It supposes a holistic approach according to which we must protect not only individual human and non-human living beings, but also holistic entities such as humankind, species, ecosystems and the biosphere as a whole.

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²⁴ Andressen and Skjaerseth (2008, p. 183): “the development of environment-friendly technology represents an important part of the solution to many environmental problems”.

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