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Editors

# Handbook of the Philosophy of Climate Change

With 9 Figures and 12 Tables

 Springer

*Editors*

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# Climate Change and Legal Theory

Michele Carducci

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## Abstract

Legal theory has always considered the historical relationship between climate and law under four perspectives: the influence of climate on political regimes, the social dependence of organizations and regulations on the types of energy used, the emergence of the issue of environmental sustainability due to the exploitation of nature, the conditioning of energy production systems on the legal qualification of space, and other legal categories (section “The Historical Relationship Between Climate, Natural Resources, and Law”). With the recent climate emergency, new challenges have arisen. The first concerns the planetary space of the emergency. In particular, the problem arises on two fronts: the relationship between the definition of the space of the climate system and the spatial concepts of individual legal systems (section “The Climate System in Legal Theory”), and the relationship between state sovereignty over natural resources and the plane-

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tary scope of climate stability (section “State Sovereignty and “Planetary Boundaries”). However, the climate emergency is also urgent and a matter of time. This situation undermines the linear representation of legal processes (section “Tragedy of the Horizon and Metabolic Rift”). Unprecedented scenarios open in discourses on human rights, which foreshadow the emergence of a human right to a stable and safe climate (section “Climate Change and Human Rights”), and on democracy, whose deliberative and representative functions turn out to be dysfunctional for the times and space of the climate emergency (section “Climate Change and Democracy”). The most recent legal practices try to react to these difficulties in three ways: through the so-called climate change litigations strategies, by embedding the rights of nature in Constitutions or other legal sources, or via the construction of transnational juridical infrastructures consistent with the logic of “planetary boundaries” (section “The Legal Practice Between “Tornado” and “Abortion” Politics”).

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**Keywords**

Climate change law · Tragedy of the horizon · Metabolic rift · Status oecologicus · Tornado politics, weather-world

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**Introduction**

Climate change is discussed in legal theory from four perspectives: formal, substantial, epistemological, and axiological.

The formal perspective includes all the analyses of the sources of international climate law, starting with the United Nations Framework Convention on Climate Change (UNFCCC) dated 1992. The UNFCCC is an international legal instrument with a dual content: on the one hand, it provides legal definitions based on science, sets objectives, and establishes the principles and obligations of States (see *Preamble* and Articles 1–6); on the other hand, it enables (with Article 7) the so-called Conferences of the Parties (COPs), a multilateral process aimed at producing further State objectives and obligations, which integrate the Convention. Furthermore, the formula of Article 2, “any related legal instruments that the Conference of the Parties may adopt,” allows COPs to create new rules and even new sources of law, which are added to the Convention itself. The Convention, therefore, is not only a dynamic legal document but also the source of new rules (Boran, 2020). The Convention is to be interpreted on the basis of both Vienna Convention on the law of treaties of 1969 and the Constitutions of the States that signed it, to the extent that the Constitutions contain themselves principles, rules, and obligations that are consistent and compatible with the international ones (Carducci, 2021).

Under the substantive perspective, legal theories discuss the consequences of climate change on the sources of law (normative, jurisprudential, and doctrinal) of State constitutional systems. This field includes studies on climate mitigation and adaptation policies (Hollo et al., 2013), those on the law of climate disasters



(Lyster & Verchick, 2018), and those on the legal nature of causality, damage, and climate responsibility (in terms of both Responsibility and Liability) (Mechler et al., 2019). Research on “climate change litigation strategies” and their function of promoting climate mitigation (Rodríguez-Garavito, 2023) can also be put in the same context.

The third perspective has an epistemological character. Knowledge of the legal problems linked to climate change requires understanding the principles of thermodynamics and the mechanism of entropy and energy (H.T. Odum & E.C. Odum, 1976). With the rise of thermodynamics, epistemology has abandoned Cartesian reductionism and the view of the world as a product of cause and effect to open up to the discovery of complex and mutual interactions of matter and energy. This turn has not immediately affected social scientists. Only from the second half of the twentieth century have thermodynamics principles been studied in connection with economic and legal organizations’ physical and natural limits. This interdisciplinary approach is due to authors such as Karl William Kapp and Nicholas Georgescu-Roegen for economics and Niklas Luhmann and Joaquin Herrera Flores for legal theory. Their contribution, however, did not shake most jurists’ ontological and reductionist dualism. In legal systems, a double separation persists between the physical-chemical universe (“things” and “goods”) and the human universe (will) and between human relations and the rest of the planet Earth, as well as an asymmetry between the (short) time of human action and the (unlimited) time of terrestrial thermodynamics. The climate emergency has definitively discarded these dualistic narratives (Kim, 2021): the emerging instability of the whole climate system and all its components (atmosphere, biosphere, hydrosphere, cryosphere, lithosphere) impacts all flows of matter and energy, including the energy/matter of which any human being is composed. The very concept of the Anthropocene reflects this awareness. The debate on the Anthropocene and the climate emergency has led to new research programs focused on the relationship between law and the use of climate sciences, on the legal and political significance of the appropriation of the atmosphere through emissions of CO<sub>2</sub>, on the consequences of climate change in terms of equity and justice (Folkers, 2020), and on the need to build legal infrastructures and planetary governance tools, capable of providing planetary answers to the systemic problem of climate change (Kotzé & Kim, 2019).

Finally, the axiological perspective discusses the relationship between climate change and human rights, democracy, and theories of justice (Brown & Taylor, 2015).

The debate on climate change and law span all these perspectives, emphasizing some elements rather than others. Consequently, exposing them in separate “blocks” would not allow a comprehensive view.

All four perspectives have in common, implicitly or explicitly, two elements: the knowledge of the historical evolution of the relationship between law, energy and climate, and the consideration of the consequences of the planetary climate emergency on the legal categories of time and space. Therefore, it is worth starting from them.

## The Historical Relationship Between Climate, Natural Resources, and Law

The cultural history of climate has analyzed the relationship between climate and the human organization of society, focusing on the intellectual representations of atmospheric phenomena.

Instead, legal and political theories have considered the relationship between climate, natural resources, climate change, and law in four lines of research of the so-called Global History: the influence of climate on political regimes, the dependence of the forms of social organization and regulation on the type of energy employed, the emergence of environmental sustainability as a consequence of the exploitation of nature, and the conditioning of the energy production systems upon the legal qualification of space, and other legal categories (Nicolini, 2022).

Sieferle and Marquardt (2009) divide the global history of law into energetic eras. Each of them has been characterized by different modes of interaction between places, energy, legal relations, ecosystem functions, and flows of matter. The modes of production and distribution of goods as well as the contents of freedoms and related legal regimes depended on these modes of interaction. Therefore, the human use of energy has not simply interacted with the climate system. It has also changed over time the eco-dependence of human action on nature, and it has altered the energy return of freedoms, namely, the relationship between the energy necessary for the concrete exercise of freedoms and the sources of such energy.

In “Paleolithic” era, humanity, living mainly by gathering and hunting to survive, favored the natural cycles of ecosystemic goods, resources, and services, adapting to them. Paleolithic humans were simple “ecosystem consumers” subordinated to nature.

In the “biochemical” era, humanity learned to practice agriculture and pastoralism, thereby reproducing and transforming natural resources and assets. Humans were transformed into “ecosystem producers,” being no longer just “consumers.” However, agricultural goods and livestock are perishable goods, to be cared for and preserved. Consequently, the human functioning was still subordinate to nature.

In the “fossil age,” on the other hand, humanity discovered new natural resources (the so-called subterranean forest). These were not consumed to survive, as they can be neither eaten nor drunk, but they allowed unprecedented processes of energy transformation. Humans evolved into “ecosystem manipulators” of nature. Human beings definitively emancipated themselves from biochemical nature and produced goods of direct or indirect fossil derivation, with a use and exchange value higher than even the primary subsistence goods. Ultimately, fossil energy dissociated human beings into two asymmetrical dimensions: the consumable one and the natural survival one, within a growing differentiation between basic human needs, which remain eco-dependent – eating, drinking, and reproducing like *Homo climaticus* (Campillo Álvarez, 2008) – and artificial needs for exchange and consumption like *Homo consumens* (Bauman, 2007).

During the twentieth century, constitutional freedoms were transformed by this dissociation and the Welfare State was also built upon it. In other words, social

well-being (to be maintained or promoted, depending on the context) was “based on carbon” and on overcoming thermodynamic constraints through the law (Casciarrari et al., 2022), as explained by Timothy Mitchell (2011), Andreas Malm (2016), Jeremy Rifkin (1980), and Michel Serres (2008), that is, achieved through an unprecedented geophysical-constitutional experiment that at the same time consumed, within a few generations, resources accumulated in the subsoil in the previous millions of years, and then released increasing quantities of GHG gases into the atmosphere, thereby yielding pollution, global warming, and climate change (Dixson-Declève et al., 2022; Pirani, 2018). Research on “social metabolism” and “bio-economy” has confirmed this scenario: fossil energy has always promoted freedoms as “material” opportunities (in terms of “progress,” “development,” “growth,” “emancipation,” “social cohesion”), but, on the other hand, it has caused increasing entropy in the Earth system, as fossil resources are exhaustible and they have a negative impact on the Earth system.

Several studies have confirmed this idea. Four very recent ones are worthy of note: the one on the so-called equation of the Anthropocene, the one concerning the “consumptagenic” nature of contemporary social subjects, the reconstruction of the energy consumption necessary for social well-being in recent decades, and the one concerning the prevalence of anthropomass over biomass.

The “Anthropocene equation” has allowed to measure the pressure of growth and maintenance of human well-being on the physical and chemical cycles of the Earth, demonstrating how that well-being has become, in the span of less than a century, quantitatively prevalent and dominant over any natural process, due to fossil resources consumption (Gaffney & Steffen, 2017; Heijungs et al., 2017).

The second study focusses on how the material autonomy of access to rights and freedoms has conditioned civil coexistence, directing it towards lifestyles based on the growth of material consumption, the so-called consumptagenic lifestyles, increasingly predominant over basic survival needs (Friel, 2020).

The third study shows that, in the last 70 years, human activities have exceeded the energy consumption of the previous 11,700 years, due to the use of fossil fuels.

Finally, the fourth study considers the load of the production of material goods necessary for human consumption on the biomass of the planet (Syvitski et al., 2020).

Only the recent Andean Constitutions of the “Buen Vivir” (of indigenous origin, therefore pre-fossil) express an attempt to overcome this vicious circle, abandoning the myth of the Welfare State and attempting to legitimize the “Caring State” and the so-called post-development State (Amirante & Bagni, 2022).

However, the phenomena of pollution and anthropogenic CO<sub>2</sub> emissions have highlighted another problematic feature of the fossil era: the qualification of space and legal entities according to the energy production systems.

The evolution of law is a history of appropriating spaces. In this perspective, constitutional power has been nothing more than an “ecological” power (Folkers, 2020), that is to say, a delimitation of the space for the appropriation of natural resources. This “ecological” power has characterized the Western legal tradition, producing an order of space, structured on two different relationships: a place of

physical objects, in relation to the human being, and a place of exclusively human relations, distinct from physical reality. The distinction thus created a separation between the order of natural things and the order of social relations.

With fossil energy, this power has extended to the atmosphere, identifying it as a new territory for the conquest of the “ecological” power of Western law, through anthropogenic CO<sub>2</sub> emissions.

This representation of all the dimensions of the climate system has generated further consequences in the relationship between law and the Earth system: for example, the division between private law (as an order of relations between human beings and things) and public law (as an order of relations between human beings in the dialectic of freedom and power), between soil and subsoil in the regulation of property rights, between political freedoms and economic freedoms. It was also the basis for the conception of the legal order as a necessary artificial structure opposing the power of nature (de Jasay, 1985).

However, this framework does not occur in other legal traditions, from Islamic to “chthonic” ones (Glenn, 2000). For this reason, it has fueled the so-called epistemic extractivism, or the diffusion of Western “ecological” power on other ways of human coexistence in the Earth system (Folkers, 2020). In other words, the Western legal tradition has imposed itself through the eradication of the historical memory of colonized communities and the denial of their knowledge, forcing them to exploit natural resources for purposes unconnected with their rules of coexistence (Grosfoguel, 2019).

During the twentieth century, the numerous economic and institutional theories concerning the so-called underdevelopment, dependence, the sovereignty of natural resources, and sustainable development were continuously elaborated within the original matrix of Western law.

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## The Climate System in Legal Theory

Climate is not object of a specific legal definition. The UNFCCC defines climate change as a “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (Article 1.2), and the climate system as “the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions” (Article 1.3). It also clarifies that the Convention’s objective is “(the) stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (Article 2) and recognizes climate change and its adverse effects as “common concern of humankind.”

These linguistic formulas are both denotative and connotative since, on the one hand, they identify the “space” of the climate system. On the other hand, they negatively qualify the “effects” of anthropogenic greenhouse gases as a “common concern.” In EU law, the UNFCCC formulas have recently been integrated and updated by Article 2 of EU Regulation n. 2020/852 dated 18th June 2020.

Legal theory uses these linguistic constructions in various ways.

Some theories disregard them and frame the climate within the category of “Global Commons” (Boran, 2020), in which the issue is the classic “tragedy” of access to and use of common resources without reciprocal damage. This perspective tends to confuse the climate with the climate system. The climate cannot be appropriated, being a variation of the temperature over time. On the other hand, all the climate system components can be appropriated. In particular, the atmosphere, the only space for effectively releasing greenhouse gases, can be appropriated (Vanderheiden, 2008). Consequently, it is possible of the “tragedy of the Commons” referring to the “components” of the climate system, not the “system” itself.

Other theories use the category of “Commons” in a critical perspective, to demonstrate the limits of the dominant point of view on climate change governance, entrusted to international agreements between States (Boran, 2020). Top-down solutions cannot solve all the problems related to the use of different resources present in the local contexts of the climate system: from soil to water services, biodiversity, ecosystemic vulnerabilities, etc. For this reason, the agreements on the climate would mostly seem destined to fail. On the contrary, the involvement of local actors in different territorial contexts, framed as “Commons,” would favor processes of knowledge of the single territories as well as cooperation and mutual accountability in the fight against climate change (Paavola, 2012).

Other scholars reduce the normative constructions of the UNFCCC to a system of state imputation of CO<sub>2</sub> emissions and differentiation of responsibilities between States, even if climate change is legally attributed to any human activity, which, independently of its content, contributes directly or indirectly to global warming (see Article 1.2 UNFCCC). Therefore, even these interpretations do not consider the concrete articulation of the climate system.

Another interpretation underlines the transformation of the legal nature of CO<sub>2</sub> from the simple phenomenon of anthropogenic emission, as indicated in the UNFCCC, to a resource legally identified as scarce due to the new contents of the 2015 Paris Agreement (McKinnon, 2015). The commitment to keep the global average temperature increase below 1.5°, well below 2 °C compared to preindustrial levels, has imposed a quantitative legal limit on emissions into the atmosphere with respect to the time required to achieve climate stabilization and the emission reduction objectives indicated by international, supranational, and national legal instruments (2030 and 2050). Consider, for example, EU Regulations n. 2018/842, 2018/1999, 2021/241, and 2021/1119, which define binding annual greenhouse gas emission reductions by Member States from 2021 to 2030, contributing to meet commitments under the Paris Agreement.

This limit is generally calculated by using the formula of the so-called global carbon budget, which is the quantity of greenhouse gases that can still be emitted without exceeding the aforementioned quantitative and temporal limits.

The new constraints and objectives of the Paris Agreement raise important questions on two fronts: that of the differentiation of the responsibilities of States; and that of the qualification of emissions with respect to the human activities that produce them.

The first group of questions can be summarized as follows: How can one distribute the carbon budget among the different States? Is it possible to subtract the historical emissions of the States from the residual carbon budget, in order to distribute the remaining emissions fairly? How can one calculate the mitigation and adaptation costs of the various States, compared to the losses and damage caused by previous historical emissions? These questions also include global equity issues, as required by the UNFCCC and the Paris Agreement.

The second group of questions refers to the issue of the existence or not of a “right to emit” greenhouse gases into the atmosphere (Boran, 2020), given that the UNFCCC does not prohibit it, the possibility of differentiating emissions into “survival” and “luxury” (Boran, 2020) the division of the mitigation costs in terms of this allocation and the possibility to tax the “unnecessary” anthropogenic emissions (Shue, 1993).

These questions appear unprecedented. However, their origin can be traced back to the human history of the appropriation of climatic space. It was the geopolitics of the climate system that laid the foundations for those asymmetries and inequalities between human activities, which then had repercussions on the evaluation of “rights to emit.” Initially, the appropriation of the climate system has invested its horizontal dimension of biosphere, hydrosphere, cryosphere, and lithosphere. From the “conquest” to the colonial empires, geopolitics has produced asymmetries and inequalities exclusively in relation to the horizontal space of the Earth, both with reference to human subjects (just think of the slave trade and slavery) and with regard to natural resources (e.g., extractivism and land grabbing). With the industrial revolution and the fossil era, geopolitical appropriation has become vertical within the atmosphere. Emitting anthropogenic greenhouse gases through the large-scale combustion of fossil fuels has meant appropriating the atmospheric space in its molecular structure (CO<sub>2</sub>, CH<sub>4</sub> etc.), thereby creating a real vertical colonization of the climate system, which has been added to previous horizontal colonization of the Earth.

The climate system has always been a space politicized by human action. With the verticalization caused by anthropogenic emissions, this politicization is enriched by three new elements (Folkers, 2020).

1. Unlike the horizontal one, atmospheric politicization is not delimited in any way, as the thermodynamics of global warming and climate change is planetary, as shown by the scientific descriptions of the “planetary boundaries,” of the “safe operating space,” of the “feedback loop” and of the “global tipping points.” Thus, the appropriation of the atmosphere projects vertically but causes horizontally extending effects on every other part of the climate system.
2. Humanity as a species participates in the politicization of the atmosphere, but with qualitative and quantitative differences in the attribution of emissions, from both an individual point of view (e.g., the distinction between emissions from economic activity and those from consumption activities, cultural, touristic, etc.) and geographic view (emissions in countries where fossil resources are extracted, such as the rentier States, emissions in the countries of production of export goods, emission in the countries of import and consumption of those goods).



3. The negative effects of this politicization do not consist only in global warming, which occurs everywhere, regardless of the geographical origin of the emission and the type of human action that caused it. They also involve the chemical composition of the atmosphere and all the other components of the climate system, multiplying the imbalances of the horizontal and vertical space of the Earth and of all the human subjects who live there.

In this new scenario, the sphere of human justice no longer corresponds to a horizontal political space artificially delimited by law. It coincides with the entire natural space of the climate system, definitively politicized even in its last dimension: the vertical and atmospheric one “conquered” by anthropogenic emissions (Caney, 2012).

The denomination of the climate as a “hyperobject” underlines this new spatio-temporal collocation of the human condition, which is difficult to understand through the traditional heuristics of empirical observation (Morton, 2013).

The overall consideration of the climate system as the unique space of atmosphere, hydrosphere, cryosphere, lithosphere, and biosphere produces further legal consequences.

Within each State, the holder of the public function of protecting the climate system (as indicated by the UNFCCC) can only be the State itself and, therefore, its organs, given that the State holds not only territorial sovereignty but also permanent sovereignty over natural resources (Greco, 2021). This is recalled by various sources of international law, including Articles 1 and 2 of the Chicago Convention of 1944 and the International Law Commission, a permanent subsidiary body of the UN, in the First Report on the Protection of the Atmosphere (A/CN.4/667), of February 14, 2014. This function of protection and custody works for the exclusive benefit of humanity, that is, for each person’s well-being, freedoms, and rights, as stated in the UNFCCC (*Preamble* and Article 3) and is confirmed by countless sources including Article 25.1 of the Universal Declaration of Human Rights of the UN of 1948, the UN Resolution 1803 AG of 14.12.1962, Principles 1 and 21 of the UN Declaration of Stockholm 1972 on the human environment (inserted in the *Preamble* of the UNFCCC), and above all Article 1.2 of both the UN Covenant on Civil and Political Rights and the UN Covenant on Economic, Social and Cultural Rights, from 1966.

Evidence on the correspondence between the custody of territories and resources, on one hand, and the well-being of people, on the other, also comes from EU law (cf. Case C-266/16 of the Court of Justice of the EU, Opinion of Advocate General Wathelet, according to which state sovereignty over natural resources is a prerequisite of effective custody of territories for the welfare of its inhabitants).

Therefore, the State and its organs are subject to the duties of protecting the climate system, corresponding to the territory of its sovereignty. Within the law of each State, this duty is regulated differently. Still, the purpose of protection is always the same: the safeguarding of spaces to protect human beings. Consider the American doctrine of Public Trust, Article 225 of the Brazilian Constitution, Article 20a of the German Basic Law, Article 2051 of the Italian Civil Code, or Article 714 of the French Civil Code.

In conclusion, the climate system contains various productive elements of qualifications and effects, subject to legal discipline.

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### **State Sovereignty and “Planetary Boundaries”**

As mentioned, climate change is described as a “common concern of humanity.” This means that the problem of climate change is a matter of planetary humanitarian projection, not reducible only to specific subjects, interests, or rights. For this reason, some argue that there is a need to acknowledge the existence of a “human right to a healthy planet” (“one Planet on Right initiative,” 2021), while others propose to build a real “Earth system law” (Kotzé & Kim, 2019). The planetary logic of the legal discussion about climate change is confirmed by natural sciences, in particular in approaches such as those focused on the “planetary boundaries” and the “Safe and Operating Space” (S.O.S.). Identifying and quantifying the planetary boundaries that are not to be crossed helps to prevent human activities from bringing about irreversible changes in the thermodynamic stability of planet Earth, even when the law of States locally legitimizes these activities. It also makes it possible to verify whether the social welfare objectives of States are compatible with the thermodynamic equilibrium of the Earth system. Therefore, the planetary scenario also highlights the dysfunctionality of traditional concepts of political and territorial unity and state sovereignty with respect to the thermodynamic unity of the climate system. This dysfunctionality undermines some of the foundations of international law and individual States. This holds, in particular, for state sovereignty over natural resources, environmental law, and Tort Law. The legal category of the permanent sovereignty of people and States over their natural resources was established in the second half of the twentieth century for two reasons (Banai, 2016): to strengthen national self-determination after decolonization, thereby allowing State territory to be free from the property rights of foreign investors and States, acquired during the colonial rule; and to promote the exploitation of nature for local economic development purposes. In other words, state sovereignty did not pursue environmental objectives of nature conservation, but the opposite (Brilmayer and Klein 2000–2001).

Climate change is forcing the States to redefine this perspective. It poses the classic “dilemma of common aversions” to all States (Weiss & Burke, 2011). All of them have a common interest in avoiding the catastrophic consequences of global warming and climate change. In this perspective, state territory and nature should no longer be conceived as objects of national selfish interests. They should become tools for achieving the stability of the whole planet and therefore of each State. Ultimately, sovereignty over resources would become the object of a “reflective” global interest. Since the security of State resources derives from the security of the whole planetary space, only global cooperation between States would allow to realize the common goal for the benefit of each one’s national interests. However, this need for cooperation is contradictory, for three reasons. First, it still depends on the sovereign will of each State and therefore remains captured by the economic,



political, and strategic interests of the State, even in the short term. Secondly, the different historical contributions of individual States in anthropogenic emissions must be taken into account. This difference prevents the unitary and homogeneous qualification not only of the responsibilities of individual states towards the thermodynamic stability of the entire planet, but also of the relationship between the national exploitation of natural resources and the level of economic and social development of each individual state. Third, the management of climate change is not only in the hands of States. Global actors such as multinational companies, investment banks, international and supranational organizations are involved in climate governance, directly or indirectly. The State is conditioned by these dynamics.

Consequently, the category of State sovereignty over natural resources remains dysfunctional with respect to planetary needs. A similar dysfunctionality also holds as state environmental law is concerned. Climate change is not a simple environmental problem. It relates to a multidimensional and systemic reality involving all human actions and their interconnections.

On the contrary, environmental law is built only on evaluating the single or cumulative impacts of certain human actions and on compensations for damage, understood as the only tool for repairing the ecosystemic imbalances of the territory. In this regard, the IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services), in its *Glossary*, speaks of “Institutional Failures”: a) legal failures, given that the regulations simultaneously provide mechanisms to support damaging behavior (such as fossil subsidies) and mechanisms to prevent or punish it (such as enforcement of the “the polluter pays” principle); b) market failures, since all economic activities constantly yield negative externalities, social costs, and transaction costs related to climate change; c) organizational failures, deriving from information and relationship asymmetries between the different actors (public, companies, regulators), involved in the “trap of institutional complexity” (the complexity of the micro decisions that contribute to negative macro effects – Bolognesi & Nahrath, 2020); d) informal failures, ensuing from the loss of trust in institutions due to the inconclusive negotiations based on the presumption that economic and ecological interests are equally balanced and expendable. The UNEP (UN Environment Programme), UNDP (UN Development Programme), and EU have studied specific instances of these failures. However, in so far as climate change is concerned, the detectable insufficiencies of environmental law are placed at two further levels: internally, as environmental law itself can fail in terms of compliance, implementation, enforcement, efficiency, efficacy, and effectiveness (Carducci et al., 2020); externally, as environmental law does not deal with climate change from a planetary perspective. In particular, scholars have emphasized the following four recurrent limits: a) the “chronic disturbance” on ecosystems, due to the sum of impact assessments, regulated by law for separate space-time sectors (considering only the interests of human actors), because of the lack of an integrated analysis in medium and long terms; b) the “tyranny of small decisions,” denounced by William E. Odum, consisting in the fact that the law segments the biosphere, separating it from other spheres of Earth and society; c) the “tyranny of localism,”

based on the false presumption that participatory local legitimation takes into account planetary perspectives; d) the imitative or bureaucratic reproduction of rules and procedures for assessing environmental impact, which are often indifferent to the complexity of the biodiversity of places and the interconnections between all the components of the climate system (Carducci, 2022).

On the other hand, climate change represents a complicated challenge due to the widespread nature of both the causal responsibility of atmospheric changes from greenhouse gases and the distribution of their impacts on the climate system. Climate change has no borders and involves all the elements of the planet Earth, without exception. This planetary characteristic explains the difficulty of framing the phenomenon within the juridical categories of causality, tort, and damage.

First, the causal chain leading to climate change is not linear. It does not consist of individual behavior, events, and consequences. Thermodynamic causality is intertwined by innumerable variables and the feedback loops of the various climate system components.

The UNFCCC formalizes some elements of this causality. More specifically, the Convention defines four levels of causality, indicated in the *Preamble* and Article 1. The first level derives from the human activities of greenhouse gas production. These activities are believed to have already “substantially increased the atmospheric concentrations of greenhouse gases,” causing the first negative effect: the alteration of the natural greenhouse effect. The second causal link depends on the former: “an additional warming of the Earth’s surface and atmosphere,” which, in turn, causes climate change that operates “in addition to natural climate variability.” Finally, global warming and additional climate change are identified as a negative influence on “natural ecosystems and humankind,” with “significant deleterious effects on the composition, resilience, or productivity of natural and managed ecosystems or on the operation of socioeconomic systems or on human health and welfare.” The “negative influence,” so defined in 1992, was updated in 2015, with decision no. 1/CP.21 of the UNFCCC, and has been elevated to an “urgent and potentially irreversible threat.”

The UNFCCC does not define damages. Article 8 of the Paris Agreement introduces the idea of “losses and damages,” distinguishing between those “associated with the adverse effects of climate change, including extreme weather events and slow onset events” and those “associated with climate change impacts.” Two types of damage manifestations, then, seem to exist: effects directly caused by climate change and negative indirect effects caused by its impacts. Among other things, this differentiation would now seem to be confirmed also by Articles 3 and 9 of EU Regulation n. 2020/852, in the part which lists the six “environmentally sustainable” goals necessary to achieve the 17 Sustainable Development Goals of the UN 2030 Agenda and, above all, to combat climate change. In fact, these articles define “environmentally sustainable” economic activities that simultaneously satisfy a double condition: they contribute “substantially” (therefore directly) to the achievement of one or more of the six environmental objectives, and they do not “significantly” (therefore indirectly) damage any of the remaining targets. With the EU Regulation n. 2021/241, this procedure has also been extended to state policies.

In any case, neither the “loss and damage” formula of the Paris Agreement nor those of Articles 3 and 9 of EU Regulation n. 2020/852 coincide with the category of environmental damage, understood as a single event that has already occurred as a result of a specific action, or with the category of tort, governed by different legal systems. The concrete contents of climate damage are constantly evolving and depend on the progress of scientific knowledge (Gills & Morgan, 2020; Callahan & Mankin, 2022). In other words, identifying and attributing certain impacts to global warming or climate change are reserved to natural sciences. This determines a mismatch between legal categories and scientific explanations. Consider the difference between empirical evidence and scientific evidence of damages due to the fact that the delayed time frame of visible confirmation of the consequences of climate change, determined by thermal phenomena, does not make the causal chain disappear. However, an analogous observation can be made regarding the geographical diversification of the manifestations of the damage (less evident in midlatitude countries, directly perceptible in the tropics).

Moreover, the establishment of the Intergovernmental Panel on Climate Change (IPCC), decided by States has been read as an international formalization of the approach of “science first” (Howe, 2014). In this perspective, the IPCC Reports can be framed as an integrative tool for the interpretation and application of the sources of climate law, in accordance with Article 31.2(b) of the Vienna Convention on the Law of Treaties (which prescribes that the interpretative context includes “any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treat”).

The IPCC defines the detection and attribution of climate change activities: “Detection of change is defined as the process of demonstrating that climate or a system affected by climate has changed in some defined statistical sense without providing a reason for that change. An identified change is detected in observations if its likelihood of occurrence by chance due to internal variability alone is determined to be small.” Attribution is “the process of evaluating the relative contributions of multiple causal factors to a change or event with an assignment of statistical confidence” (Bindoff et al., 2013).

In conclusion, the science reported by the IPCC conditions the legal qualifications of harm and tort. Not surprisingly, the reference to science is also suggested by the *Oslo Principles on Global Climate Obligations* and by Articles 6–9 of the *Model Statute for Proceedings Challenging Government Failure to Act on Climate Change* (2020) of the International Bar Association.

The centrality of science is also the basis of the precautionary principle, contained in Article 3.3 of the UNFCCC. It is a very detailed rule, whose deontological elements cannot be ignored by decision-makers:

The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with

climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.

Its contents anticipate the holistic approach that was later recognized by the 2015 Paris Agreement (Article 6.8) and by the aforementioned EU Regulation n. 2020/852.

In practice, the climate precautionary principle must be read in a triple perspective: that of mitigation; that of the definitive stabilization of the climate system, required by Article 2 of the UNFCCC; that of the evolution of scientific knowledge and the objectives based on the legal instruments introduced by the various COPs. After the Paris Agreement and the IPCC Special Report of 2018 *Global Warming of 1.5 °C*, the precautionary principle is supplemented by two new legal elements: a quantitative one, limiting global warming between 1.5 °C and well below 2 °C compared to preindustrial levels (Article 2); a temporal one, establishing the time within which to achieve the thermodynamic equilibrium of the planet (Article 4). In EU law, these two elements are specified by further sources, such as Regulations nn. 2018/842, 2018/1999, 2020/852, 2021/241.

Furthermore, the level of scientific certainty concerning the effects of climate change, and not only its causes as already defined by the UNFCCC, disappears in the legal approaches to prudential risk assessment, based on the classic distinction between “false positive” (e.g., accepting liability for a nonexisting risk) and “false negative” (e.g., denying liability for a real risk) (De Jong, 2018). Planetary and local climate risks are now out of the question. This means that the systemic dimension of climate change requires a proactive legal approach, different from the reactive one of traditional Tort Law (Giabardo, 2019).

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## Tragedy of the Horizon and Metabolic Rift

Despite all the complexities described, in the mindset of legal rationalism, the components of the climate system are almost always presented and discussed separately (Bosselmann, 2010). In this perspective, the problems posed by climate change are addressed as single aspects, rather than as a whole. The climate emergency itself is interpreted as the sum of distinct, independent, and overlapping emergencies. On the contrary, the criticalities are inextricably linked for three reasons: they mutually influence each other, they are all caused by human action, and they all affect the thermodynamic stability of the planet Earth.

The global initiative called “Scientists’ Warning” (<https://www.scientistswarning.org/>) promotes a unitary understanding of the planetary emergency, presenting it as an ecosystemic (Ripple et al., 2017) and climate (Ripple et al., 2022) emergency.

What does This unity mean from a legal theory point of view?

Generally, legal scholars classify any emergency, including environmental ones, on the basis of four characteristics directly or indirectly related to exceptions. These

would be temporary, sudden, and unpredictable events, not necessarily attributable only to human action (otherwise, they would be classified as “illegal conduct”) and non-transformative of human coexistence (after the emergency, one returns more or less to the previous “normal” situation).

In the face of temporary emergencies, risk management and exceptional powers can be discussed. The ecosystem and climate emergency are none of these, though.

Rather than a temporary event, climate change is a planetary condition of irreversible and pejorative critical processes. Rather than “unpredictable,” it has been predicted in various ways for decades. Rather than not attributable to human action, it has a prevalently anthropogenic origin. Instead of being non-transformative, it works in exactly the opposite way, towards a future no longer analogous to any part of human history.

In such an unprecedented situation, it no longer makes sense to discuss individual “risks.” The whole world is in danger everywhere and so are all components of the climate system. This is why the UNFCCC, in 2015, defined climate change as a “potentially” irreversible “threat.” The UNFCCC, also in 2015, further qualified this “threat” as “urgent.”

The time factor adds to the unprecedented nature of the planetary emergency. There is little time to stabilize the Earth’s thermodynamic system, if the goal is to prevent the worsening consequences of climate change from becoming uncontrollable.

Science has translated this predicament by using the mathematical formula  $E = R \times U$ : that is, the emergency derives from the increased risk (R) in the urgency (U) of the limited time available (Lenton et al., 2019). But the new scenario is also described with the formula “Tragedy of the Horizon” (Bolton et al., 2020).

This time factor conditions all the world’s legal systems on three fronts.

The first front concerns the mismatch between the timing of decisions and the timing of the catastrophic effects of climate change. The “horizon” of the latter does not coincide with that of the economic and political decision-makers. The time cycles of the real economy, financial economy, and political action are very short. On the contrary, the catastrophic effects are produced slowly, but their obtaining is certain. Consequently, the “tragedy” could consist in making future generations pay for the current absence of decision-making mechanisms adapted to the long time scales of climate effects.

Furthermore, climate stability should be seen as a global asset on a par with financial stability and global trade. This means that it should be removed from the contingent electoral interests of political majorities and from the lobbying of corporations involved in fossil emissions. However, here too, the “tragedy of the horizon” emerges.

On the one hand, there are no permanent institutions dealing with climate stability with autonomous powers independent of political dialectics and economic interests, and this is the “tragic” fact. Moreover, the impossibility of this independence is made evident by the phenomenon of the so-called carbon leakage: the relocation of carbon emissions by multinational companies according to the degree of severity and rigor of the States’ climate policies.

On the other hand, the time “horizon” prevents from experimenting new organizational models, able to deal with issues no longer exclusively. Hence the phenomena of path dependency, often qualified in terms of “carbon lock-in,” that is, the decision-making inertia of political-energy systems based on fossil fuels.

This is a real final game, where a quantitative result to protect all components of the climate system (keep the global temperature increase no more than 2 °C) must be achieved within the time frames suggested by the science (reduction of emissions by 2030 to achieve climate neutrality by 2050 and final stabilization by 2100), with contents that are also final (such as, for example, the irreversible decarbonization of the economy).

The traditional and rational chronopolitics of institutions, based on the quadrinomial forecast-planning-action-execution, is disoriented and displaced. The law can no longer control the time factor in the ways experienced up to now (Lazarus, 2010).

On the other hand, the temporal interdependence between law and climate system reflects the interaction between anthropic systems and the ecosystem, studied by human ecology, bioeconomy, and ecological economics, social ecology, and the analyses of socio-ecological systems (Kramer et al., 2017).

In a word, the “tragedy of the horizon” demonstrates that the metabolic fracture between human action and the rest of nature has determined not only the superimposition of anthropogenic emissions on the natural carbon cycle but also the dysfunctionality of the legal time frame for the transformation and adaptation of institutions to the urgencies of the climate system as a whole.

The “Climate First/Development First” dilemma, referring to the 17 SDGs of Agenda 2030, summarizes this unprecedented difficulty of law and politics in the era of planetary emergency.

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## Climate Change and Human Rights

Countless international and supranational legal sources now recognize the impact of climate change on human rights. It is sufficient to recall the *Joint Statement on Human Rights and Climate Change* of the five UN human rights bodies, dated September 16, 2019, and the UN OHCHR document *Frequently Asked Questions on Human Rights and Climate Change*, dated 2021. The Paris Agreement of 2015, in the *Preamble*, recalls that the Parties “should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity.”

But the connection between the climate system and human existence is also a scientific acquisition of biophysics, formalized with the expression “One Health-Planetary Health” (Tripartite and UNEP support OHHLEP’s definition of “One Health”: *Joint Tripartite (FAO, OIE, WHO) and UNEP Statement*, 1 December 2021).



Climate change poses a cataclysmic threat to public health and human rights. Global health is inextricably linked to planetary health, with a changing climate influencing the conditions necessary for human health and safety while undermining a range of human rights.

In this perspective, it is now possible to speak of a human right to a stable, safe, balanced climate and to “compatible emissions” (with climate stability). This right becomes the operational condition necessary to keep the other rights effective over time. Without a stable climate, each human right is threatened. Consequently, claiming the human right to a stable and safe climate constitutes the prerequisite to fulfil all the other human rights: from the substantive ones to life, health, and a healthy environment to the procedural ones of information and participation in climate and environmental policies.

The European Parliament Resolution on the *European Green Deal* dated 15 January 2020 also affirms this point ([https://www.europarl.europa.eu/doceo/document/TA-9-2020-0005\\_EN.html](https://www.europarl.europa.eu/doceo/document/TA-9-2020-0005_EN.html)). In fact, in paragraph 2 of the Resolution it is proclaimed that “all people living in Europe should be granted the fundamental right to a safe, clean, healthy and sustainable environment and to a stable climate, without discrimination, and that this right must be delivered through ambitious policies and must be fully enforceable through the justice system at national and EU level.”

In legal theory, the arguments in favor of the existence of the human right to a stable and safe climate are mainly three: textual, moral, and rhetorical (Pisanò, 2022).

The first argument identifies in some existing normative documents, both with a constitutional and international nature, the source of the human right to a stable and safe climate through the connection of their content with the UNFCCC and the Paris Agreement. Such a hypothesis is feasible if the Constitution contains useful textual references and the sources of international climate law formally bind the State. In any case, in this way, the human right to a safe and stable climate is embedded in the sources and grounds of national legal systems. It can be used in domestic litigations against the State or companies.

The second argument appeals to the State’s climatic obligation as an intertemporal moral bond towards State’s natural resources and future generations. This strategy is more theoretical than practical, but it has the merit of emphasizing the problem of intertemporal justice in climate policies. Not surprisingly, it is also inspired by the principle of “common but differentiated responsibilities and respective capabilities” (CBDR-RC) of Article 3 of the UNFCCC, which deals with “justice,” “fairness,” and “equity” in climate politics, especially regarding “climate debts,” that is, the debt owed by developed States to developing States due to their former disproportionate contribution of emissions to global warming (Boran, 2020). The debates on climate justice can also be included within this panorama. Indeed, climate justice affects the “planetary boundaries” of the climate system.

Consequently, climate justice does not necessarily relate to environmental conflicts, referring to individual territories and social contexts. On the other hand, energy justice opens up a sectoral scenario: energy transition to be considered in terms of equity in the abandonment of fossil sources and equal access to renewable

sources, without new inequalities and “energy poverty.” Finally, ecological justice ranges from the geopolitical issues of the unequal ecological exchange between the north and south of the world to the relationship between human activity and nature. Theories such as biospheric egalitarianism and species injustice also move from similar ethical premises (Kopnina, 2014).

The third argument uses the rhetorical tool of synecdoche to support the existence of an autonomous human right to a stable and safe climate. With the synecdoche, two legal formulas on the subject of human rights, linguistically distinct but referring to realities physically dependent on each other (the territorial realities of legal orders within the planetary climate system) can be associated by the interpreter to affirm the existence of a new legal category, even if not inserted in an explicit document. This stratagem is frequent in Civil Law systems, and it has allowed the adaptation over time of legal words and arguments based on very ancient sources, such as Civil Codes. In this perspective, the German theory of “status oecologicus” can also be mentioned, as a new human condition that is added to the citizen’s “status passivus” (Brugger, 2011). In the democratic constitutional State, citizenship also has a “status passivus,” that is, a set of duties of mutual solidarity to promote justice and substantial equality. But what happens when everyone is exposed to the planetary ecosystem and climate emergency? The new condition requires that the priority of duties is no longer simply “political,” that is, holding only towards one’s fellow men, as in the normal “status passivus.” It becomes a set of “ecosystem” duties and, therefore, duties towards the entire climate system. The human right to a stable and safe climate requires the fulfilment of this duty of “ecosystem” solidarity by the State.

On the other hand, the theory of “status oecologicus” appears like that of the “Microbial State,” according to which the sovereignty of the State is now dependent on the fate of the ecosystem and of the entire planet Earth (Fishel, 2017).

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## Climate Change and Democracy

As mentioned, the climate emergency highlights a series of legal dysfunctions. This observation has also led to a discussion of the “organized irresponsibility” of representative democracy itself (Beck, 2008).

According to the majority of scholars, the reasons for this difficulty are temporal and spatial in nature. The temporal reason derives from the fact that climate change is an exponential process and by accumulation: current effects derive from past emissions, while the effects of today’s emissions will be experienced in the future. Such a process is difficult for representative democracies to govern. Democratic regimes take decisions in the short term according to the contingent electoral consensus, without taking into account the past and without being able to represent the consensus of future generations. This means that democratic deliberations are structurally irresponsible on two temporal fronts (Thompson, 2009): towards the past since they cannot answer for the consensus and mistakes which have produced today’s climate problems; towards the future, as they separate those who decide



today from those who will suffer the consequences of today's decisions in the future (Wynes et al., 2021).

The spatial reason depends on the observation that the link between anthropogenic emissions and climatic reactions is of an ecosystemic and planetary type. This link attributes relevance to some places or environments on the planet due to their function in the global climate balance (e.g., Amazon's carbon sink function). These places, however, fall under the sovereign jurisdiction of individual States, which may be nondemocratic. Therefore, there is an asymmetry of political regimes with respect to the common importance of some ecosystem functions, with consequent difficulty in building shared methods of discussion and decision on global climate challenges. It is not a coincidence that the debates about the "governance of climate change" or a "global climate constitutionalism" highlight this contradiction (Boran, 2020), while the "polycentric" approaches, such as those proposed by Elinor Ostrom to spread local democracy, or the idea of a "complex regime" able to involve actors other than States, serve to promote local or sectoral collective action, but do not contribute to democratizing world climate policies (Ostrom, 2014).

Therefore, there is no correspondence between the time and spheres of democratic deliberation (at both state and local level) and the times and places of climate problems (Boran, 2020): in a predominantly undemocratic world, practicing democracy as a global method is illusory.

Other theorists, on the other hand, believe that the dysfunctions of democracy have an epistemic nature. In this perspective, four theses can be remembered: those drawing on Foucauldian discourse analysis and the concept of governmentality to observe how processes of democratic deliberation reproduce certain forms of knowledge of climatic problems and legitimization of possible solutions, obscuring alternative discourses and decisions (Skoglund, 2014; Death, 2014); the claim by Timothy Mitchell on the "fossil" nature of modern political representation, unable to free itself from the negative conditioning of the energy system that it helped to legitimize (Mitchell, 2011); that defended by Chien-Yi Lu on the incompatibility between the "spontaneous order" of the global market, promoted and guaranteed by liberal democracies, and the "necessary order" of the planetary climate system (Lu, 2020); the one put forward by Bonaventura de Sousa Santos on the "extractivist" identity of Western democracy, an identity based on the exchange value of all human actions rather than on their use value with respect to the survival needs of the human species (de Sousa Santos & Mendes, 2020).

Indeed, liberal democratic representation recognizes and promotes freedom of opinion and pluralism of interests (political, economic, cultural). These conditions do not necessarily favor optimal solutions of climate issues. Lack of scientific competence in decision-makers, the ignorance of voters, veto games between opposing interests, the disputed role of experts, even denial are all concrete possibilities that a liberal democracy cannot suppress, but neither can it consider prevailing over the "uncomfortable knowledge" of the dependence of human life on the thermodynamics of the climate system (Rayner, 2012).

In the end, it seems that it is precisely the constitutional status of the human subject, legally constructed as a "political" or "stakeholder" individual, rather than as a "biospheric" subject, to feed this short circuit (Dominger et al., 2017).

Even the empirical analysis of democracy does not eliminate doubts about the contradiction. On the one hand, it demonstrates that democracies contribute most to the provision of global public goods, including that of climate stability (Baettig & Bernauer, 2009). On the other hand, it also confirms that the results of policies, measured in terms of emission levels, remain insufficient and that international cooperation between democracies does not eliminate the “free-rider problem” and permits the irresponsibility of nondemocratic States. Indeed, the latter, not having to account for their policies to their citizens, can remain indifferent to planetary ecosystem problems, while benefiting from the global advantages of the climate decisions of others.

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### **The Legal Practice Between “Tornado” and “Abortion” Politics**

It is possible to complete this review by analyzing what reactions the challenge of climate emergency produces in legal practice and whether these reactions share common assumptions.

The scenario of answers is structured around three experiences: the use of the so-called climate change litigations strategies; proposals for the recognition of the rights of nonhuman nature in the Constitutions or other legal sources, and attempts to build transnational legal infrastructures consistent with the logic of “planetary boundaries.” These practices converge on three assumptions for the analysis of legal problems relating to climate emergency.

The first assumption concerns the space of legal decisions and considers the anarchic nature of international society, that is, the lack of an apparatus hierarchically superior to the States, which is able to produce unitary planetary reactions to climate emergency. States remain the subjects appointed to implement law, including international law. However, international norms enter state systems generally through instruments of ratification, and thus also become part of the national legal system. Ultimately, the only effective space for decision on the climate emergency is that of individual States. But how do States act within this space?

On this front, the second assumption comes into play, referring to the difference between the times of climate emergencies and the times of state legal decisions. It can be summarized by Roger Pielke’s theory on the contrast between “tornado politics” and “abortion politics” (Pielke, 2007). Pielke uses this metaphor to explain the relationship between the public perception of danger, the timing of political decisions, and the use of science. When people know that a tornado can hit their city, they tend to cooperate and act quickly to protect their life and property. In these situations, then, politicians are induced to make more courageous, even unpopular, choices and to emphasize the primacy of public interest rather than the pressure of particular interests, especially of an economic nature. Finally, the fear of imminent danger leads to an increase in public trust in expert knowledge and in a dialogue with science. The need for common salvation and the use of scientific knowledge become a priority and hierarchically superior to any other evaluation of political action. “Tornado politics” describes this scenario.

Conversely, when the imminence of the danger is not visible, the “tornado politics” effect does not occur, and politics continues to operate as if nothing had happened, both in terms of response times and in terms of dialogue with science, in a context of a public opinion that is not particularly alarmed nor demanding. In this scenario, there remains a logic of compromise and regulation of all the interests at stake, without any hierarchy, according to the decisional perspective of balance or “win-win” (Carducci et al., 2020).

A different situation is what Pielke calls “abortion politics,” where the choices rest on conflicting and tragic moral issues, not facts of imminent danger, such as the tornado, but visions of life and the value dimensions of human life. In this scenario, not only unsolvable conflicts and tensions arise, inevitably affecting public decisions and cooperation, but the dialogue itself with science becomes conflictual, and the acquisitions of science can open scenarios that are not always acceptable from a moral point of view. Consequently, in “abortion politics,” a “win-win” balance is not reached, not because hierarchical priority is given to public interests, but because moral conflict is never balanced and science cannot replace moral judgment.

Now, how do global warming and climate change fit into this dichotomy? Do they produce “tornado politics” or “abortion politics”? Unfortunately, the two phenomena, summarized in the empirical observation of climate emergency, are similar to “tornado” and “abortion.” How?

They are similar to the “tornado,” because they identify a real and already existing danger, such as a tornado, but unfortunately not immediately “visible” (unlike the tornado). This distortion of space-time makes the discussions and decisions on climate emergencies more similar to those typical of “abortion politics,” since the dangers are not immediately “visible” as they would be in a tornado, political and social actors make moral evaluations, which are subjective, rather than those based on knowledge and dialogue with science, with related scarce public cooperation and actions aimed at compromise in the short term, rather than the pursuit of the public interest of common salvation. In turn, however, the contingent compromise is still unsatisfactory for everyone: both for those who endorse moral considerations (e.g., the contrast between movements for climate justice and those who affirm the moral centrality of the economy over nature) and for those who know, through science, the actual “tornado” contents of climate emergencies (e.g., scientists’ criticisms of political inefficiency).

The third assumption concerns the contents of state legal decisions, conditioned by the logic of economic globalization. This logic “captures” the State by imposing the priority of economic and financial interests over the reasons for the thermodynamic stability of the planet Earth. A legal formalization of this scenario is offered by the Energy Charter Treaty (<https://www.energycharter.org/>), a source of international law that creates a sort of “Energy Constitution,” under which the sovereign decisions of States cannot prevail over the investment interests of large multinationals. Some contents of the document make this logic explicit. Article 18 states “The Contracting Parties recognize state sovereignty and sovereign rights over energy resources. They reaffirm that these must be exercised in accordance with and subject to the rules of international law.” However, the official interpretation declared by the States is that

“Article 18(2) shall not be construed to allow the circumvention of the application of the other provisions of the Treaty” (Final Act of the European Energy Charter Conference, Declaration V). The fact is that no other source of international law, including climatic ones, can prevail over the Energy Charter (in accordance with Article 16(2) of the Energy Charter Treaty and the criterion of the most favorable provision for the investment). Furthermore, Article 47(3) reinforces the “capture” of the State, as it binds it to the interests of investors even after withdrawal, for a period of 20 years after the state decision. For this reason, the States and the European Union are discussing an adaptation of the Charter to the 2015 Paris Agreement (European Parliament resolution of 24 November 2022 on the outcome of the modernization of the Energy Charter Treaty (2022/2934(RSP)) and the Constitutions (Witte, 2018).

The aforementioned three legal practices converge in the objective of countering or neutralizing the negative consequences of these three assumptions.

The “climate change litigation strategies” are used all over the world to achieve the objectives of climate change mitigation by States or multinational companies, through judicial decisions. They emphasize the use of science in the courts and the prevalence of consequentialist over axiological arguments (Mayer, 2023). Therefore, they aim to overcome the impasse between “tornado” and “abortion politics..”

The proposals for the constitutionalizing or legalization of the rights of nonhuman nature are mainly inspired by the 2008 Constitution of Ecuador, the first in the world to recognize nature as a legal subject. They are also discussed in Europe (Carducci et al., 2020) and aim to promote and legitimize a biocentric and ecosystemic legal logic, in order to neutralize the various forms of the “capture” of the State by global economic and financial interests (Viaene, 2022).

Finally, the hypotheses of transnational juridical infrastructures test new legal methods to end the international anarchy that weakens States in the fight against climate change (Kotzé & Kim, 2019).

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## Conclusions: Law in the Weather-World

As Tim Ingold (2010) wrote, “knowledge is formed along paths of movement in the weather-world.” This also applies to law.

With the climate emergency, the “weather-world” questions the order of things and words of legal knowledge. The legal subdivisions separating the spheres of nature and culture are now inadequate to effectively solve the climate system’s problems in its planetary dimension (Mulgan, 2011). Furthermore, the awareness of this inadequacy makes the present times extremely different from any other previous era of humanity (Kemp et al., 2022). Law, from being an instrument to control and change reality, is transforming itself into an element dependent on the atmosphere.

The human community, creator of carbon energy and of the rules that legitimized the liberation of its actions from the limits of nature, is no longer the real subject of change. On the contrary, it has become an obstacle to change, due to the intrinsic

contradiction that Dipesh Chakrabarty summarizes as follows: “a collectivity whose commitment to fossil-fuel based, energy-consuming civilization is now a threat to that civilization itself” (Chakrabarty, 2012).

Therefore it is necessary to rely on the climate and the weather as unavoidable reference points in decision-making.

It is an inevitable conceptual earthquake (Crate & Nuttal, 2009). What human beings have made an object well regulated by law (nature) reappears as a subject that imposes relations on all. All people are now interconnected with the atmosphere precisely because of the need to reduce, if not to completely replace, the fossil emissions of greenhouse gases.

Ultimately, humanity has transformed the atmosphere into a great “common.” This “common,” however, is orphan of adequate legal systems. Then, the “good” has turned into a “common evil,” which forces one to share the threat, in the paradox of not finding unitary solutions on a planetary level (Galvin, 2020).

It seems evident that human law does not conform to the “first law of ecology” (Commoner, 1971): everything is connected with everything else. Hence, the law must be connected to the rest of things, too.

But it is equally clear that climate is not time. While the former is a stochastic modeling based on forecasts and statistical calculations of metadata for temperature regulation (for this reason the climate is classified as having an ecosystem regulatory function), time is a dimension built by knowledge and social institutions based on experiences and representations of the life of human beings. This means that the law, in order to solve anthropogenic climate change-driven problems, needs the predictions of science. Decisions based on forecasts, however, imply questioning the present for the future: it involves questioning certainties about social and institutional constructions of time (Kang et al., 2023).

This double dissociation between human law and the “first law of ecology,” on the one hand, and between atmospheric and human time, on the other, identifies the epochal challenge of law in the face of climate change. Confronted with this challenge, the function of legal rules can no longer be limited to reduce human impacts on the environment. A teleological transformation of legal systems is necessary, in which the absence of human interference on the planet’s climatic stability becomes the *ratio* of every rule, exactly as indicated by Article 2 of the UNFCCC.

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## Cross-References

- ▶ [Climate Change and Decision Theory](#)
- ▶ [Climate Change and Democracy](#)
- ▶ [Climate Change and Distributive Justice](#)
- ▶ [Climate Change and Environmental Justice](#)
- ▶ [Climate Change and Global Justice](#)
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- ▶ [Climate Change and Intergenerational Justice](#)

- ▶ Climate Change and Overpopulation
- ▶ Climate Change and Religion
- ▶ Climate Change and Republicanism
- ▶ Responsibility for Climate Harms

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