

Legal Dimensions of the Climate Sustainability of Artificial Intelligence

Lecturer Mircea DUȚU-BUZURA¹

Abstract

Digital and artificial intelligence (AI) systems now form the nervous system of the whole of society and the economy, and their environmental and climate impact (in terms of energy consumption, consumption of resources such as water and critical minerals, etc.) is growing, with increasingly negative consequences. At the same time, their operation relies on complex, opaque, and invisible infrastructures, which, in turn, give rise to numerous negative externalities - such as mining, the transport and refining of raw materials, land and energy consumption, and so on - and exacerbate the ecological footprint. The climate sustainability of AI is a complex and urgent issue; on the one hand, the technology is presented as an indispensable tool for optimizing the ecological and climate transition, while on the other hand, its infrastructure (data centers) generates a significant carbon footprint in terms of energy consumption (with GHG emissions) and water use. Without adequate regulation and proper planning of data centers, the projected climate trajectory toward achieving carbon neutrality in the second half of this century risks being compromised. Combining climate risk with technological risk in the equation of sustainable development thus represents a key factor in social and economic progress and generates a real legal challenge. The climate sustainability of the use of new technologies, as an integral but distinct part of environmental sustainability in certain respects, has important technological characteristics, which are also relevant in the context of the relevant legal response. The priority of mitigating the energy and climate impacts of large data centers is clear, and placing its regulation in the context of AI's environmental sustainability framework requires significant conceptual developments and appropriate social and technological practices. Mitigating the sector's spatial, energy, and climate impacts involves urban integration of these aspects and cross-sectoral regulation. The defining feature is reconciliation and symbiosis between economic growth, energy transition, climate neutrality, and limitation of rising global average temperatures below the critical threshold. At the same time, there are efforts to redefine the objectives of the Paris Agreement (2015) by introducing a new indicator for the conversion of clean energy, measuring the gap between the growth of low-carbon energy sources and that of total energy demand, which is to become the benchmark at future COPs under the United Nations Framework Convention on Climate Change, enhance the importance of the AI's ecoclimatic sustainability and the need for its proper governance, including through appropriate legal instruments.

Keywords: *environmental sustainability of AI; climate sustainability of AI; climate impact of AI; energy impact of AI; legal framework; carbon footprint of AI; climate neutrality; environmental law; climate law.*

¹ Mircea Duțu-Buzura - Faculty of Law, Ecological University of Bucharest, Romania. ORCID: <https://orcid.org/0009-0008-3597-2543>. E-mail: mircea.ueb@gmail.com.

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1. General Remarks

Artificial intelligence presents an ambivalent environmental and climate report. While training and intensive use of this technology are having an increasingly significant impact on the climate through high consumption of energy, water, and other resources, its applications also serve as an important tool for improving resource management and modeling ecological solutions in general, and climate assessments in particular.

Limiting the environmental and climate impact of AI system infrastructures is essential for achieving the UN’s Sustainable Development Goals (SDGs) and climate neutrality by 2050, as globally pledged in the 2015 Paris Agreement. Reconciling and optimizing the balance between the ecological and carbon footprints of new technologies and the progress they offer in environmental protection are reflected in AI’s environmental sustainability, a technical and legal concept that is gaining ground both theoretically and in relevant regulations. At this stage, given the emerging international legal framework (particularly within the UN system) and the development of European AI law, the specific obligations regarding the assessment of AI’s ecological footprint and the reconciliation of its development with environmental and climate protection are based primarily on transparency, codes of conduct, and eco-design, and less on binding legal regulations. In any case, a trustworthy, ethical, and sustainable AI represents generally accepted dimensions and guides regulation and governance in this field, pending concrete regulatory and institutional developments in this matter.

2. AI’s Climate Durability (Sustainability)

It is rightly argued that the climate sustainability of artificial intelligence is based on a paradox: this cutting-edge technology, through its applications, is a major cause of digital pollution (carbon footprint, consumption of water and other resources, waste), yet it is also an increasingly important tool to model the climate and improve the ecological transition, including the energy transition.

From this perspective, AI's climate sustainability is shaped and structured around two main axes that are in a state of constant flux: the carbon footprint of this advanced technology (AI and its environmental impact) and, respectively, the contribution of its applications to promoting sustainability (AI for environment and climate). Thus, with regard to the first perspective, the development of generative AI models requires the installation, development, and operation of massive data centers that consume enormous amounts of energy and resources. In terms of energy consumption, training and usage, large language models (LLMs) consume a lot of energy. A single query using this type of AI can consume up to five times more electricity than a standard web search. As for water resources, the needs to cool down servers and produce electricity require large amounts of water, even though water is scarce and faces major quantity and quality issues in many parts of the world. Last but not least, the depletion of abiotic resources and the management of electronic waste (related to servers) weigh heavily on the ecological balance of AI. Finally, the use of critical minerals poses challenges in terms of availability and ecological costs associated with their extraction, use, and disposal.²

However, despite its negative impact on the climate in particular and the environment in general, AI represents a modern, complex and future-oriented technological tool that plays a crucial role in achieving the global objective of climate neutrality and the other priorities of the ecological transition and sustainable development. Among the various applications of this dimension of the technology, climate modeling plays a central role, as AI enables a significant improvement in the accuracy of weather forecasts and climate change modeling. Then there is the optimization of networks, which helps regulate power grids, integrate intermittent renewable energy, and optimize energy consumption in homes, buildings, and smart cities. The applications of new technologies, particularly those involving artificial intelligence, are proving to be highly beneficial also in terms of adapting to the effects of climate change, both from a technical and scientific standpoint and from an appropriate governance perspective. A good example is the growing role of AI in land-use planning and urban planning, as well as in the application of the relevant laws³.

To fulfill commitments and achieve climate goals amid the rise of new technologies, the technology sector and regulators are particularly focused on eco-design. In this context, it is worth mentioning frugal AI, which encourages the use of smaller, more specialized models that are more computationally efficient. Then, the efficiency of data centers cannot be overlooked, as the use of

² Tianqi Xiao, Francesco Fuso Nerini, H. Damon Matthews, Massimo Tavoni, and Fengqi You, "Environmental Impact and Net-Zero Pathways for Sustainable Artificial Intelligence Servers in the USA," *Nature Sustainability* 8 (2025): 1541–1553, <https://doi.org/10.1038/s41893-025-01681-y>.

³ Andrei Duțu-Buzura, "Dreptul urbanismului și inteligența artificială," *Pandectele Române*, no. 1 (2026): 125–139, <https://pandectele.ro/dreptul-urbanismului-si-inteligena-artificiala/>.

renewable energy to power them and the improvement of cooling systems both contribute to this goal.

Environmental cost, resource appropriation (land, water, critical minerals), visual disruption and noise pollution, potential conflicts of use, etc., have already generated opposition and objections from citizens and civil society in general in countries such as the U.S. and France, and signal the emergence of a new field of climate litigation⁴.

2. AI's Environmental Sustainability under International Law

2.1. Emergence of the Issue at International Level

The international perception and regulation of artificial intelligence is a very recent development, and the inclusion of the issue of its environmental sustainability came after the adoption of the two major European acts in this area – Council of Europe Framework Convention of 17 May 2024 on AI and human rights, democracy, and the rule of law, and Regulation (EU) 2024/1689 of 13 June 2024 laying down harmonized rules on AI –. Of course, debates regarding technological progress and its implications in international relations have always been of interest and have held a special place in interstate cooperation and regulation. Areas of application of international law are influenced by such developments. Space law has been confronted with the development of maritime, aeronautical, and space technologies. Humanitarian law has addressed, among other things, military equipment and technology. With regard to environmental rights, it involved taking over and legalizing numerous technical standards and is based on numerous scientific findings. The regular or special reports of the Intergovernmental Panel on Climate Change (IPCC) form the basis of the entire international legal framework on combating climate change and adapting to its effects. The vast majority of international organizations have, in fact, a scientific and technical vocation (telecommunications, health, agriculture, intellectual property, transportation, environment, meteorology, etc.). It is therefore natural to be interested in AI development and its implications on sustainable development, especially since technological applications have an impact on many areas of this field. The recognition of digital issues in international legal frameworks has been structured progressively, as information and communication technologies (ICT)

⁴ Nicolas Chapuis, “En Virginie, la capitale mondiale des data centers confrontée à la contestation croissante des habitants,” *Le Monde*, May 8, 2026, https://www.lemonde.fr/economie/article/2026/05/08/en-virginie-la-capitale-mondiale-des-data-centers-confrontee-a-la-contestation-croissante-des-habitants_6687065_3234.html; Pierre Manière, “En France, l’inquiétante envolée des émissions de CO₂ des data centers,” *Le Monde*, May 21, 2026, https://www.lemonde.fr/economie/article/2026/05/21/en-france-l-inquietante-envolee-des-emissions-de-co-des-data-centers_6691905_3234.html.

have evolved from mere technical tools into instruments of development and power. In the context of these developments, the first unifying milestone was the World Summit on the Information Society, held in two phases: in Geneva (in 2003) and Tunis (in 2005). This process, carried out under the auspices of the International Telecommunication Union (ITU) and the UN General Assembly, established the concept of the information society as an object of global cooperation. This laid the foundation for a digital order based on universal access to information through efforts to bridge the digital divide, international cooperation, and promotion of human development.

By the end of the next two decades, international law was seeking to integrate the new challenges related to cybersecurity, privacy protection in the digital age, combating illegal online content, or the relationship between ICT and international security. The initiatives to regulate the digital sector have thus developed within various global institutions, reflecting the diversity of challenges and approaches. At the UN, discussions focused on international security and human rights; ITU targeted infrastructures, networks, and connectivity development; UNESCO looked at ethical governance of digital technologies and media freedom. These efforts have reflected a constant tension between the logic of digital sovereignty, which some countries are seeking to strengthen, and the ideal of an open and shared digital space. This dynamic found new expression with and through the adoption of the Global Digital Compact at the Summit of the Future held in New York on 22 and 23 September 2024. It updates the founding moment of 2003-2005, adapting its objectives to contemporary realities, and aims to establish common principles for a safe, inclusive digital environment grounded on human rights and the principles of sustainable development.

Objective 5 of the Global Digital Compact establishes AI as a global priority in terms of governance, security, and solidarity. The text calls for “balanced, inclusive, and risk-based” AI governance, ensuring equal representation of all countries and the effective participation of public and private actors. Objective 5 assigns the UN a coordinating role and calls for the establishment of a multidisciplinary Independent International Scientific Panel tasked with assessing AI impacts, as well as a global dialogue on AI governance intended to ensure regular monitoring of the issue. The document also invites the standards development organizations to collaborate in establishing interoperable standards that uphold reliability, sustainability, and ethical compliance of AI systems.

Several international organizations are already addressing AI issues within their respective areas of competence, thereby contributing to the gradual emergence of an international regulatory framework for AI based on a human-centered approach. At the same time, specific rules are being adopted or are currently being drafted to adapt existing law to the most sensitive areas of AI, where ethical, security, and societal concerns call for stronger regulation.

2.2. AI Sustainability and the International Ecoclimatic Debate

The issue of AI sustainability and how its impact aligns with the UN Sustainable Development Objectives has been a major topic of discussion in international debates on the subject. Thus, as early as 2022, OECD published a working paper on measuring the environmental impact of artificial intelligence compute and applications⁵. The document aimed to improve the understanding of AI's impact on the environment, particularly on the climate, in the context of climate change, and to help measure and minimize the negative effects of this new technology, while also accelerating efforts to harness them for the benefit of the planet. In this regard, a distinction was made between the direct environmental impacts arising from the development and use of AI systems and the indirect costs and benefits of using AI applications. The working paper recommends looking beyond energy consumption and operational emissions, establishing measurement standards, expanding data collection, identifying AI's specific impacts, and improving transparency and fairness in order to help policymakers make AI part of the solution to sustainability challenges. A 2025 report by the same OECD highlighted the fact that measuring AI's energy impact is a necessity. In this regard, the development and implementation of policies aimed at the responsible use of AI for the environment and the incorporation of technology's specific sustainability aspects were promoted⁶.

It was also highlighted that the energy impact of AI compute needs to be measured, particularly the energy consumption associated with model training and inference. The following measurement elements were proposed:

- indicators related to greenhouse gas emissions associated with computing, in connection with OECD's works on assessing the carbon footprint of digital infrastructures;
- measuring the material footprint, including the resources required by data centers and supply chains for components;
- environmental performance indicators of AI applications, specifically the ability of AI systems to help reduce GHG emissions or preserve biodiversity;
- training and governance indicators, such as data transparency, technical documentation, and the ability of organizations to integrate environmental and climate criteria into AI development.

With the same perspective in mind, the United Nations Economic Commission for Europe (UNECE) published, in April 2025, Recommendations for

⁵ OECD, "Measuring the Environmental Impacts of Artificial Intelligence Compute and Applications: The AI Footprint," *OECD Digital Economy Papers*, no. 341 (Paris: OECD Publishing, 2022), <https://doi.org/10.1787/7babf571-en>.

⁶ Global Partnership on AI (GPAI), *Responsible AI Strategy for the Environment* (May 18, 2025), <https://oecd.ai/en/wonk/documents/responsible-ai-strategy-for-the-environment>.

Ethical and Sustainable AI⁷. The document offers an analysis of climate action from the perspective of innovation, particularly in relation to AI. It is thus emphasized that the latter can improve climate modeling, optimize energy networks, and support sustainable resource management. The recommendations, however, caution against the environmental impacts of digital technology, particularly the energy consumption of data centers and the carbon footprint of AI models. UNECE recommends the development of governance frameworks that promote and ensure ethical, transparent, and sustainable AI⁸. Emphasis is placed on the need to invest in robust digital infrastructures and high-quality data. Public-private partnerships are encouraged to implement AI solutions in support of the ecological and climate transition. The document calls for strengthening all administrative capacities to integrate AI into climate policies. To this end, increased international cooperation is envisaged to harmonize standards and share best practices. Finally, it is noted that innovation must remain aligned with the objectives for sustainable development and achieving climate neutrality.

For its part, UNEP (the United Nations Environment Programme) suggests in its documents that AI's environmental assessment should be standardized⁹. Underlining the fact that AI holds great promise for helping to address certain global urgencies, such as mapping methane emissions or extracting natural resources. However, its rapid development and infrastructure raise major environmental concerns.

With regard to mitigating the climate impact of data center use, UNEP proposes the following measures: standardizing environmental assessment, regulating corporate transparency, optimizing the energy efficiency of algorithms, “greening” data centers, and integrating AI-related policies into global environmental regulations. The overall goal is to ensure a positive balance for the planet before the massive implementation of the regulatory framework.

In the same international context of concerns, the International Telecommunication Union (ITU) proposed in July 2025 that AI's impact on the environment should be assessed¹⁰. The report concludes that it is necessary to assess the environmental impact of new technologies by combining indicators that cover

⁷ United Nations Economic Commission for Europe (UNECE), *Unleashing the Power of Innovation for Climate Action: Policy Recommendations for Ethical and Sustainable Artificial Intelligence*, ECE/CECI/2025/3 (Geneva: UNECE, April 16, 2025), https://unece.org/sites/default/files/2025-05/ECE_CECI_2025_3_2506040E_Rev.pdf.

⁸ UNECE, *Unleashing the Power of Innovation for Climate Action*, ECE/CECI/2025/3.

⁹ United Nations Environment Programme, “AI Has an Environmental Problem. Here’s What the World Can Do about That,” November 13, 2025, <https://www.unep.org/news-and-stories/story/ai-has-environmental-problem-heres-what-world-can-do-about>.

¹⁰ International Telecommunication Union (ITU), *Measuring What Matters: How to Assess AI’s Environmental Impact* (Geneva: ITU, July 2025), <https://www.itu.int/hub/publication/s-gen-gda-001-2025/>.

the entire life cycle of digital systems, namely:

- measuring energy consumption and associated emissions, from model training up to their use;
- indicators regarding the use of water and material resources required for infrastructures;
- transparency indicators that enable documenting the data, architectures, and technical choices that influence the environmental footprint;
- positive impact indicators that measure AI's contribution to reducing emissions or improving environmental efficiency across various sectors.

Several pertinent remarks are offered in the first resolution on artificial intelligence and the environment, which was adopted by the UN Environment Assembly in December 2025¹¹. UNEA 7-9 established, for the first time, a multilateral framework on the environmental sustainability of artificial intelligence systems. It recognizes that AI can support climate action, while also highlighting the risks associated with energy, water, and resource consumption. The text tasks UNEP with producing a report on the benefits, risks, and environmental impacts of AI to clarify future relevant intergovernmental decisions.

2.3. Establishment of the Independent International Scientific Panel on AI and Its Mission

In March 2026, the UN General Assembly appointed the 40 members (selected from over 2,600 candidates) of the Independent International Scientific Panel on AI (the UN-AI Panel) for a three-year term to independently and impartially assess the many facets of artificial intelligence, particularly its opportunities, risks, and impacts. The aim is to establish a new governance tool, a panel that will provide pluralistic and independent transnational expertise on the challenges posed by this new technology, with implications that will affect the entire relevant international response.

When it comes to AI, regulatory disputes do not arise solely over the more or less legal, binding nature of the relevant texts, which remain fragmented at the international level. They also take place upstream, with regard to the ability to generate common categories, define points of focus and interest, identify externalities, and organize the proliferation of relevant technical knowledge. In other words, even before regulating the matter, we must first determine how to describe and evaluate it, and from which institutional framework we stabilize and shape its common understanding. This is precisely where the establishment of such a panel comes into play.

The appointment of the members of the UN-AI Panel continues and is a

¹¹ United Nations Environment Assembly, “Environmental Sustainability of Artificial Intelligence Systems,” Resolution 7/9, UNEP/EA.7/Res.9 (2025), <https://www.unep.org/environmentassembly/unea7/outcomes>.

direct result of the Pact for the Future, adopted on 22 September 2024, which includes the Global Digital Compact as an annex. The latter explicitly stipulated the establishment within the UN of an independent international scientific panel on AI, as well as the initiation of a global dialogue on the governance of artificial intelligence. The context in this regard is clear: promoting evidence-based scientific understanding, conducting assessments of opportunities, risks, and impacts, and, at the same time, creating an inclusive forum for discussion among countries and stakeholders. UN General Assembly Resolution (A/RES/79/325) of 27 August 2025 gave this project an institutional dimension, setting out the procedures for the panel and the future global dialogue. The UN then presented the approach as an inclusive platform designed to enable relevant stakeholders to discuss critical issues raised by this technology. According to the UN Secretary-General, the Panel will work to a tight schedule, and a first substantive report is expected in July 2026.

The selection criteria focused on (remarkable) expertise, interdisciplinarity (technical competence and analytical skills), and diversity (balanced geographical distribution).

This institutional initiative is a response to a gap in global governance, namely the lack of independent and rigorous scientific expertise that is accessible to all countries, including those that do not have the same technological capabilities. In this regard, it is recognized that power imbalances in this field are also imbalances in expertise. The future international dialogue on AI governance aims specifically at correcting this imbalance, not by creating a global regulator, but by establishing a more inclusive framework for deliberation, where the discussion is not dictated solely by technological powers or dominant private actors. From a legal standpoint, the stake is significant: it is a matter of bringing the formal sovereignty of countries closer to their actual capacity to participate in the drafting of rules. Of course, it is also important not to overestimate the nature of the mechanism that has been established. The Panel is neither a global regulatory authority, nor a certification agency, nor a body vested with binding regulatory power. It rather belongs to the international field of soft law; its function is to produce impartial, evidence-based assessments capable of guiding the debate and shaping the flow of regulatory options. But it is precisely from this perspective that its influence can be considerable. By providing in-depth analysis of risks, social impacts, economic effects, or potential infringements on fundamental rights, the Panel could provide relevant data for UN General Assembly resolutions, inspire technical standards, guide national regulators, and offer a common language to jurisdictions and public authorities for conceiving responsibilities, vigilance, or non-discrimination in the field of AI.

Undoubtedly, the panel's main contribution could be to establish, at international level, specifically within the UN framework, a common base for analysis regarding the responsible use of AI. While not constituting a universal code in the legal sense, its works are likely to reinforce shared references around

themes that have already been raised: human rights, inclusion, transparency, accountability, bridging the technological divide, or even sustainable development and the protection of the environment and climate. In this regard, a better dissemination of principles across international frameworks, national laws, and public or private governance practices could be encouraged.

Its influence could also be felt in terms of strengthening international cooperation in this area. Due to its diverse structure and its UN roots, the Panel is destined to facilitate dialogue between different regulatory traditions and to make more legible the currently fragmented approaches among security imperatives, market logic, digital sovereignty strategies, and protection of fundamental rights. This approach promoted a form of policy interoperability among existing regulatory frameworks, helping countries to better identify and anticipate the most sensitive risks, whether they involve disinformation, algorithmic discrimination, privacy protection, access disparities, concentration of technological power, or the effects of AI on work, information, and democratic processes. Last but not least, environmental and climate sustainability will also be addressed in this context.

Despite its significant limitations and the complicated state of international relations, the promotion of such an initiative gives rise to a number of hopes. The UN General Assembly's approval of the Panel's members, despite public objections from the United States, shows us that even expertise presented as independent and scientific is a matter of power. Determining who produces legitimate knowledge, according to which procedures and within what institutional framework, already means distributing regulatory authority. To this effect, the nomination of the Panel members can also be seen as an attempt by the UN to regain the initiative, not so much in terms of enforceability as in terms of legitimacy, and not to impose rules, but rather make certain issues obvious, a series of diagnoses more apparent, and some asymmetries less visible.

Perhaps, when it comes to the balance of power, including technological power, the establishment and operationalization of the UN-AI Panel may seem insignificant, but it plays a crucial role in affirming the need for global governance of a rapidly expanding global issue. And in creating the conditions for the legitimacy and predictability of a legal framework that, sooner or later, will inevitably emerge as such.

3. Obligations of Countries Relating to Climate and the Ecological Sustainability of Artificial Intelligence

Developing climate law and making it independent, particularly in its international dimension, along with the interactions between the ecological and digital transitions, have helped make the environmental and climate sustainability of artificial intelligence a cross-cutting issue with specific legal relevance, and a concern for the new international governance. In this context, the Advisory

Opinion of 23 July 2025 of the International Court of Justice (ICJ) on the obligations of States in respect of climate change, through its analysis and findings, serves as a highly authoritative indicator of the evolving international legal framework in this field, laying the groundwork for understanding and promoting its significance in relation to current and future eco-climatic and technological realities. In this context of continuous progress and non-regression, the UN General Assembly resolution of 20 May 2026¹² regarding the ICJ's Advisory Opinion on the obligations of States in respect of climate change calls on States to continue their efforts aimed at implementing and enhancing the effectiveness of international environmental law and at its creative development. It is specifically recommended that renewable energy capacities be tripled and the global average annual rate of improvement in energy efficiency be doubled by 2030. This new UN initiative is of particular importance with regard to climate justice; by adopting this resolution, the countries acknowledge their legal obligations in the face of the serious human rights crisis caused by climate change, in promoting sustainable development goals and the interdependencies with other sectors, including those related to the transition to new technologies¹³.

Among the international developments influencing the impact of AI applications on the environment and climate, we can also note the economic and trade arrangement reached between China and the United States following the meeting of 30 October 2025, which included commitments concerning rare earth elements and other critical minerals. These are the main components of digital devices and are essential for the manufacture of electric vehicles and wind turbines. Last but not least, they are key components of the defense industry, necessary for the production of drones and various types of military equipment (missile guidance systems, infrared sensors, radars, etc.). At the heart of numerous key industries linked to new technology, with aspects where these intersect with the environment, the possession of critical metals is a significant asset on the contemporary international geopolitical stage¹⁴. Set in the new game of international relations, the issue is addressed within a context marked by uncertainty and a departure from the rules and principles of international law structured around the UN Charter, based on circumstantial agreements with ad hoc, uncertain, and unstable rules. Such a geopolitical situation is a sign that pre-existing inter-State legal rules are less capable of perceiving and expressing the specific-

¹² Camille Girardin Lang, "Climat : l'Assemblée générale de l'ONU adopte une résolution pour mettre en œuvre l'avis consultatif de la CIJ," *Actu-Environnement*, May 21, 2026.

¹³ Mircea M. Duțu-Buzura, "Noi dimensiuni ecoclimatice ale dreptului la un mediu sănătos," *Universul Juridic*, no. 4 (2026): 113.

¹⁴ Xiaobing Huang and Jiawei Xie, "From Resources to Value: China's Shifting Position in the Global Value Chain of Rare Earth," *Journal of Cleaner Production* 518 (2025): 145880, <https://doi.org/10.1016/j.jclepro.2025.145880>.

ity of these materials in relation to their uses, methods of exploitation, and, ultimately, the establishment of a legal framework appropriate to such a subject. A multidisciplinary and in-depth legal analysis of the international governance of critical raw materials may, for the time being, reveal the prevalence of unilateralism, the direct confrontation, and the lack of an adequate regulatory legal framework¹⁵.

Finally, it is also worth noting that, even though this topic was not on the agenda of the official COP-30 negotiations (November–December 2025), it has gained increasing prominence on the Action Agenda, which brings together voluntary commitments by civil society, businesses, and communities¹⁶. In this context, too, the relationship between climate and AI has involved two competing sides: on the one hand, the advantages offered by technological solutions for accelerating the energy transition, and on the other, the fact that widespread use leads to a critical increase in energy consumption and sometimes promotes climate misinformation. In this regard, it was emphasized that AI's environmental impact relates to the energy and resource consumption of data centers, and the unregulated expansion of new technologies risks undermining the objectives of greenhouse gas emission reduction. A major concern raised during the conference debates was the proliferation of AI-generated content intended to spread disinformation, which was identified as a direct threat to climate action. Ahead of COP30, a monitoring study conducted by the Observatory for Information Integrity in partnership with Climate Action Against Disinformation identified approximately 14,000 COP30-related mentions associated with terms such as “disaster,” “joke,” “catastrophe,” and “failure,” representing a 267% increase compared with July 2025.¹⁷

4. Environmental Sustainability under the AI Act.

As noted in previous analyses of the issue, the AI Act acknowledges the environmental impact of the new technology and requires developers of general-

¹⁵ Executive Order 14358, “Modifying Reciprocal Tariff Rates Consistent with the Economic and Trade Arrangement Between the United States and the People’s Republic of China,” November 4, 2025, <https://www.whitehouse.gov/presidential-actions/2025/11/modifying-reciprocal-tariff-rates-consistent-with-the-economic-and-trade-arrangement-between-the-united-states-and-the-people-s-republic-of-china/>.

¹⁶ United Nations Framework Convention on Climate Change (UNFCCC), “Global Climate Action at COP 30,” 2025, <https://www.unfccc.int/climate-action/events/global-climate-action-at-cop/global-climate-action-at-cop-30>; High-Level Champions for Climate Action, *COP 30 Action Agenda Events Programme*, updated November 20, 2025, https://unfccc.int/sites/default/files/resource/Action_Agenda_Program_COP30.pdf.

¹⁷ Thais Lazzeri and Rafael de Pino, “COP Disinformation Hits Record High,” *Oii – Observatory for Information Integrity – Climate*, September 25, 2025, <https://oiiclimat.substack.com/p/cop-disinformation-hits-record-high>.

purpose AI (GPAI) systems to document estimated or known energy consumption, but excludes direct carbon footprints or water consumption from mandatory regulation¹⁸.

AI environmental stakes are taken into account in two ways: in the provisions aimed at facilitating investment and innovation, on the one hand, and in the environmental sustainability requirements for AI systems placed on the market, on the other. Starting from the observation that they are evolving rapidly, which calls for the establishment of new forms of regulation and experimentation, the AI Act allows for an indirect approach to environmental issues through uniform regulation that includes support mechanisms favorable to investment and innovation, specifically stipulating the establishment of sandboxes by Member States. The goal is to enable AI developers, including those in the environmental sector, to test their systems in a controlled space, while ensuring full compliance with the applicable regulatory framework. Thus, the possibility is offered to assess the technology under real-world conditions with a guarantee of legal safety. This mechanism promotes the acceleration of placing green technologies on the market, particularly within businesses.

By classifying AI systems based on their level of risk, the AI Act seeks to contribute to reducing regulatory uncertainty, and to create a legal framework conducive to investment in innovative solutions. Low-risk AI devices benefit from minimal regulatory requirements, which is likely to facilitate their rapid distribution.

With regard to the AI's environmental impacts, EU legislation does not define sustainability standards for AI systems as such, leaving the responsibility for such definitions to the Member States and, accordingly, to the area of voluntary commitments/standards¹⁹. However, there are requirements regarding transparency in the use of data and resources, which is a particularly relevant obligation for systems having a significant environmental impact, such as those used in energy and transportation infrastructure.

5. Conclusions. A Legal Framework in the Making

The relationship between the environment and the ecoclimatic impact of AI is gradually finding its appropriate legal expression, particularly through the regulation and promotion of the ecological sustainability of new technologies. The corresponding legal framework currently under development consists, on the one hand, of soft law regulations (charters, recommendations, principles, pacts, etc.), and on the other hand, of hard law norms (laws, EU regulations, treaties,

¹⁸ Andrei Duțu-Buzura, "Impactul IA asupra mediului în cadrul AI Act," *Pandectele Române*, no. 4 (2025): 40–48, <https://pandectele.ro/impactul-ia-asupra-mediului-in-cadrul-ai-act/>.

¹⁹ Ugo Pagallo, "On Twelve Shades of Green: Assessing the Levels of Environmental Protection in the Artificial Intelligence Act," *Minds and Machines* 35 (2025): article 10, <https://doi.org/10.1007/s11023-025-09713-4>.

and conventions). The international regulatory process was initiated within the UN and its specialized agencies and takes the form of a common general framework for promoting ethical, trustworthy, and sustainable AI. At the European level, the AI Act integrates this issue from the perspective of two approaches. First, AI must respect the environment and the climate in its conception/design and use, in the same way as other values protected by EU law, such as health, safety, or democracy. However, this requirement appears only in the recitals of the regulation, was included in its draft version, and was ultimately dropped, so that, in the end, it did not acquire a firm legal formulation. Then, the same EU legislative act highlights the extent to which AI actively contributes to the preservation of the environment and the climate system, particularly in the agriculture, energy, or transportation sectors, but even in this regard, no obligation to implement such measures is stipulated. The only formal requirements apply in cases of serious harm, in the form of alerts and coercive measures. At the same time, incidentally, the issue of AI's climate sustainability is addressed by European and national regulations in the field of corporate social and environmental responsibility. For its part, the 2024 Framework Convention of the Council of Europe on AI establishes the benchmarks for regional cooperation in this field, supplementing the relevant EU regulation, thereby succeeding to outline the continental model in this area in fundamental harmony with the rest of the EU's political and legal framework, including its eco-climatic dimension.

The prospect of limiting the AI's impact on the environment, as proposed by UNEP (December 2025), outlines and promotes five approaches: measuring the environmental impact of artificial intelligence to obtain reliable, relevant information; the obligation to publish the data obtained in this manner; improving the efficiency of AI systems to ensure an adequate response while using less electricity; making data centers less polluting by using renewable energy or offsetting carbon emissions, and incorporating AI issue into environmental policies. With such possible general guidelines, the future legal regime for the environmental sustainability of AI technologies could be developed, in a complementary and mutually reinforcing manner, both in terms of AI regulation, by expanding its dimension regarding sustainability and the prevention and reduction of the ecological and carbon footprint, and, respectively, in terms of developing environmental regulations to address the AI's environmental impact and treat it through means that are specific to environmental law. It is at the intersection of these two broad categories of legislation that the regime of environmental sustainability for artificial intelligence is gradually but surely taking shape.

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