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**The Environmental Challenges of AI in EU Law: Lessons Learned from the Artificial Intelligence Act (AIA) with its Drawbacks**

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## **The Environmental Challenges of AI in EU Law: Lessons Learned from the Artificial Intelligence Act (AIA) with its Drawbacks**

### **Abstract.**

**Purpose** – The paper examines the environmental challenges of AI in EU law that regard both illicit uses of the technology, i.e., overuse or misuse of AI, and its possible underuses. The aim of the paper is to show how such regulatory efforts of legislators should be understood as a critical component of the Green Deal of the EU institutions, that is, to save our planet from impoverishment, plunder, and destruction.

**Design/methodology/approach** – In order to illustrate the different ways in which AI can represent a game-changer for our environmental challenges, attention is drawn to (i) the initiatives on the European Green Deal; (ii) the proposals for a new legal framework on data governance and AI; (iii) principles of environmental and constitutional law; (iv) the interaction of such principles and provisions of environmental and constitutional law with AI regulations; (v) other sources of EU law and of its Member States.

**Findings** – Most recent initiatives on AI, including the AI Act of the European Commission, have insisted on a human-centric approach, whereas it seems obvious that the challenges of environmental law, including those triggered by AI, should be addressed in accordance with an onto-centric, rather than anthropocentric stance. The paper provides four recommendations for the legal consequences of this shortsighted view, including the lack of environmental concerns in the AI Act.

**Research limitations/implications** – The environmental challenges of AI suggest complementing current regulatory efforts of EU lawmakers with (i) a new generation of eco-impact assessments; (ii) duties of care and disclosure of non-financial information; (iii) clearer parameters for the implementation of the integration principle in EU constitutional law; (iv) special policies for the risk of misusing AI for environmental purposes. Further research should examine these policies in connection with the principle of sustainability and the EU plan for a circular economy, as another crucial ingredient of the Green Deal.

**Practical implications** – The paper provides a set of concrete measures to properly tackle both illicit uses of AI and the risk of its possible underuse for environmental purposes. Such measures do not only concern the ‘top down’ efforts of legislators, but also, litigation and the role of Courts. Current trends of climate change litigation and the transplant of class actions into several civil law jurisdictions shed new light on the ways in which we should address the environmental challenges of AI, even before a court.

**Social implications** – A more robust protection of people’s right to a high level of environmental protection and the improvement of the quality of the environment follows as a result of the analysis on the legal threats and opportunities brought forth by AI.

**Originality/value** – The paper explores a set of issues, often overlooked by scholars and institutions, that is nonetheless crucial for any Green Deal, such as the distinction between the human-centric approach of current proposals in the field of technological regulation and the traditional onto-centric stance of environmental law. The analysis considers for the first time the legal issues that follow this distinction in the field of AI regulation, and how we should address them.

**Keywords:** Artificial Intelligence (AI); Artificial Intelligence Act (AIA); Environmental Law; European Climate Act; Green Deal; Integration Principle; Sustainability.

**Paper type:** Research paper

### **1. Introduction**

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3 Over the past 200 years, a series of industrial revolutions has radically improved the standards of  
4 human life. Such industrial revolutions, however, have attained economic growth through the  
5 degradation of our planet, a tragic borrow from the future. AI technologies should help us tackling  
6 the climate crisis, much as achieving economic growth through the principles of sustainable  
7 development. A strong consensus exists in the international community on how AI can be a game-  
8 changer for our environmental challenges, a critical component of the Green Deal we need for saving  
9 our planet from impoverishment, plunder, and destruction. AI (and data) should not only be exploited  
10 for commercial purposes, but also, to support the United Nations Sustainable Development Goals  
11 (UNDP, 2015). Some initiatives aim to illustrate how this is possible (e.g., ITU, 2018).  
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15 However, from a legal viewpoint, the boundaries of this Green Deal remain uncertain, in particular,  
16 as regards the kind of urgency and legal priority that the environmental challenges and opportunities  
17 of AI should have vis-à-vis the threats of this technology. A set of prohibited AI practices, e.g., real-  
18 time bio-ID systems, established by the European Commission's proposal for a new Artificial  
19 Intelligence Act (AIA), from 21 April 2021 (EU Commission, 2021), illustrates this point with the  
20 bans of Article 5. The "green impact" of AI is not a top priority in most jurisdictions and, all in all,  
21 the AIA is no exception. It refers to the right to a high level of environmental protection and the  
22 improvement of the quality of the environment, pursuant to Art. 37 of the EU Charter of Fundamental  
23 Rights (CFRs), as simply "relevant." In other jurisdictions, e.g., the US National AI Initiative Act,  
24 which is valid law since 1 January 2021, the aim is to "ensure continued leadership" in this field and  
25 "lead the world" in both public and private sectors. In a survey among African Countries, asked to  
26 map their priorities for the use of AI across 13 different areas through an urgent-important matrix,  
27 they ranked "*Applying AI for environmental protection, disaster risk reduction and natural resources*  
28 *management*" as sixth. 8 out of 31 countries qualified such priority area as important although not  
29 urgent (UNESCO, 2021, at 9 and 42).  
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33 In light of the current state-of-the-art, the aim of the paper is to ascertain what kind of legal relevance  
34 should the right to a high level of environmental protection and the improvement of the quality of the  
35 environment have, in particular, as concerns current EU policies on AI and data governance?  
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38 Dealing with issues of technological regulation, data protection, and environmental law, some  
39 scholars have in fact discussed about some sort of "Brussels effect," namely, the extra-territorial  
40 effect exerted unilaterally by EU regulations (Bradford, 2012; Floridi, 2021). The assumption is that  
41 the non-divisibility of data and the compliance costs of multinational corporations, dealing with  
42 multiple regulatory regimes, may prompt most AI manufacturers to adopt and adapt themselves to  
43 the strictest international standards across the board, that is, the EU data protection and environmental  
44 framework.  
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47 However, *pace* the Brussels effect, we affirm that things are far more complex. The environmental  
48 challenges of AI in EU law have to do with (i) the initiatives on a European Green Deal; (ii) the  
49 proposals for a new legal framework for AI and data governance; (iii) fundamentals of EU  
50 environmental law, e.g., the principles of 'sustainability' and 'integration'; (iv) the interaction of such  
51 principles and regulations of environmental law with AI regulations and further sets of rules that  
52 apply to AI, including the general data protection regulation, or GDPR; and finally, (v) other sources  
53 of EU law and of its Member States, such as Directive 2014/95/EU on disclosure of non-financial  
54 information, duties of care, and the procedural rights to class actions and other forms of protection  
55 for associations and non-governmental actors.  
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59 The analysis is accordingly divided into five parts, each of which is devoted to the different facets of  
60 the environmental challenges of AI in EU law. The overall aim is to determine whether and to what  
extent the current regulatory framework is good enough to tackling such environmental challenges.

## 2. EU strategies to achieve a green transition

The European Green Deal is the Commission's growth strategy that aims to transform the EU into a fair and prosperous society, in which, for instance, no net emissions of greenhouse gases should exist in 2050. To attain also but not only this aim, the Commission stresses that "data, combined with digital infrastructure (e.g., supercomputers, cloud, ultra-fast networks) and artificial intelligence solutions, can facilitate evidence-based decisions and expand the capacity to understand and tackle environmental challenges" (EU Commission, 2019, at 18; EU Commission, 2020, p.1). One of the Commission's main tasks is to "explore measures to ensure that digital technologies such as artificial intelligence... can accelerate and maximise the impact of policies to deal with climate change and protect the environment" (EU Commission, 2019, at 9). AI systems for distance monitoring of air and water pollution, or for monitoring and optimizing the use of energy and natural resources, are some among several possible examples of the new opportunities brought about by digital technologies. Sustainability should be at the heart of the digital sector.

The epic change proposed by the European Green Deal has recommended the EU institutions to set up a Circular Economy Action Plan, i.e., a future-oriented agenda building on a regenerative growth model that gives back to the planet more than it takes. By increasingly reducing our consumption footprint in accordance with the circular economy, the Plan assumes that "innovative models based on a closer relationship with customers, mass customisation, the sharing and collaborative economy, and powered by digital technologies, such as the internet of things, big data, blockchain and artificial intelligence, will not only accelerate circularity but also the dematerialisation of our economy and make Europe less dependent on primary materials" (EU Commission, 2020, p.2).

Likewise, another relevant EU institution, the European Council has endorsed the aim to achieve a climate-neutral EU by 2050 (EU Council, 2019), pursuant to the objectives of the 2016 Paris Agreement on climate change. In the wording of the Council, "all relevant EU legislation and policies need to be consistent with, and contribute to, the fulfilment of the climate-neutrality objective while respecting a level playing field." Therefore, the Council invited the Commission to examine whether this requires an adjustment of existing rules. As a sort of response, the Commission presented the Proposal for a new regulation on net emissions of green houses, i.e., the so-called European Climate Law. The European Parliament and Council reached a provisional agreement on the Climate Law Regulation in April 2021. Art. 1 refers to the EU's 2050 climate-neutrality mission as the "binding objective" of all measures that shall be taken at both Union and national levels. As occurs with several regulations of EU law, e.g., the general regulation on civil aviation and drones, it is up to the Commission the review of existing policies and Union legislations, to assess their consistency with the climate neutrality end.

Other initiatives of the Commission were mentioned in the previous sections, such as the AIA from April 2021, with the Proposal's Explanatory Memorandum of the act. Further initiatives connected with our topics include both The Digital Services Act and the Digital Markets Act from 15 December 2020; the Data Governance Act from 25 November 2020; the EU Cybersecurity Act entered into force on 27 July 2021; and last but not least, the ongoing work in progress of the European Health Data Space legislative proposal. All in all, we may presume that such legal initiatives are coordinated, although some discrepancies should be stressed. Such discrepancies do not regard any kind of logical inconsistency, but rather, they depend on the discretionary powers of lawmakers with their policy options in the fields of AI, data governance, and environmental law. The result is a complex legal framework, in which most efforts regard mechanisms of coordination and cooperation for either law enforcement purposes (i.e., the overuse or misuse of AI), or coordination and cooperation with all stakeholders, i.e., the underuse of AI (Pagallo *et al.*, 2019).

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4 In order to illustrate some practical inconsistencies of today's EU law, the next section deepens this  
5 scenario with the analysis of the Explanatory Memorandum of the AIA, in particular, how we should  
6 interpret this text in accordance with the Green Deal of the EU institutions. By adopting the "principle  
7 of charity" of Donald Davidson, our assumption is to find logicity and rationality in the complex  
8 EU legal framework. How does the human-centric approach of today's EU regulatory initiatives on  
9 AI relate to the onto-centric stance of the Green Deal of the EU institutions? Are such human-centric  
10 approach and onto-centric stance properly coordinated, or does the difference entail some relevant  
11 legal consequence?  
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### 14 15 **3. How the Green Deal overlaps with the challenges of AI governance**

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17 The EU initiative on climate neutrality spans across many policy areas, including the Union's external  
18 policies, whereas all economic sectors should help the EU to attain the end of a sustainable future. A  
19 successful and fair transition entails a green oath to 'do no harm.' The AIA makes no exception. On  
20 the one hand, the aim of the act is to ensure a well-functioning internal market for AI systems, in  
21 which both benefits and risks of AI should adequately be addressed. On the other hand, the challenges  
22 of AI should be grasped in connection with the EU initiative on climate neutrality. According to the  
23 Explanatory Memorandum of the proposal, both the green and digital transformations of our society  
24 represent a "twin challenge" and Article 3(3)(c) of the European Climate Law refers to the "best  
25 available technology" as a crucial factor for the success of the EU green initiatives.  
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29 However, how eco-friendly the AIA is, remains an open issue. In general terms, the proposal supports  
30 an EU internal market that hinges on secure, trustworthy, and ethically aligned AI systems. By  
31 adopting a risk-based approach, the aim is to ban a set of unacceptable uses of AI that trigger a clear  
32 threat to the safety, life, and other rights of individuals (Art. 5). Specific rules concern in any event  
33 all AI systems with "a risk of harm to the health and safety, or a risk of adverse impact on fundamental  
34 rights" (Art. 6). Among such fundamental rights, the AIA Explanatory Memorandum refers to the  
35 right to a high level of environmental protection and the improvement of the quality of the  
36 environment, pursuant to Art. 37 CFRs. This right to environmental protection is mentioned as  
37 "relevant" (EU Commission, 2021, at 11).  
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41 High-risk AI systems shall be subject to strict obligations and mandatory requirements before they  
42 can be put on the market (Art. 9-15). It is noteworthy, however, that such mandatory requirements  
43 for high-risk AI systems do not include any commitment against adverse environmental impacts, lest  
44 such AI systems pose a direct threat to "the health and safety, or a risk of adverse impact on  
45 fundamental rights." The Report of the European Parliament's special committee on Artificial  
46 Intelligence in a Digital Age (AIDA) criticizes such approach as omitting "any hazards related to the  
47 environment" (Gailhofer *et al.*, 2021, at 10). The claim is that the proposed set of rules on AI and  
48 data governance, transparency, human oversight and security simply overlook a governance system  
49 that shall prevent critical environmental impacts of technology. After all, most proposals on the  
50 "environmental sustainability" of technology, including AI, are left to voluntary initiatives put in  
51 place by providers of non-high-risk AI systems as regards, for instance, the formation of codes of  
52 conduct (EU Commission, 2021, whereas no. 81 and article 69.2).  
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### 55 56 **4. Environmental wellbeing and trustworthy AI**

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58 Most of the constitutional charts consider the protection of our environment as a "fundamental right."  
59 This right should be protected also when assessing whether an AI system poses high risks. Yet, as  
60 stressed by the AIDA Committee with its critics to the first draft of AIA, "at least where human rights  
or clearly defined human interests are not simultaneously concerned, environmental risks remain

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3 outside of the scope of the binding norms of the proposal.” A human-centric approach has improperly  
4 replaced a more comprehensive onto-centric stance. This lack of attention to the environmental risks  
5 of AI has recommended the AIDA Committee to introduce an assessment of the environmental  
6 impact of AI in the existing European regulatory framework (Gailhofer *et al.*, 2021, at 37). Such an  
7 assessment should complement that which most international institutions, including the European  
8 Commission, proclaim in their documents. Going back to the AIA, its Explanatory Memorandum  
9 stresses that “such action is especially needed in high-impact sectors, including climate change [and]  
10 environment” (EU Commission, 2021, at 1).  
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14 At the international level, the balance between environmental policies and AI regulations can be  
15 summed up with the idea of “sustainability.” For example, the UNESCO’s *Preliminary Study* includes  
16 sustainability as one of the twelve principles for the development, implementation and use of AI,  
17 clarifying that “for all AI applications, the potential benefits need to be balanced against the  
18 environmental impact of the entire AI and IT production cycle” (COMEST, 2019, at 20). Likewise,  
19 the World Commission in its report on robotics (COMEST, 2017, at 5, 7-9), acknowledged that “the  
20 potential benefits of robots need to be balanced against the environmental impact of the entire robot  
21 production cycle” and recommended “that, at both the national and international levels, codes of  
22 ethics for roboticists be further developed, implemented, revised and updated, in a multidisciplinary  
23 way, and responding to possible future advancements of robotics and its impact on human life and  
24 the environment.” This approach fits like hand into glove with the UNESCO Executive Board’s study  
25 on the technical and legal aspects related to the desirability of a standard-setting instrument on the  
26 ethics of AI: “AI should be developed in a sustainable manner taking into account the entire AI and  
27 information technologies (IT) production cycle. AI can be used for environmental monitoring and  
28 risk management, and to prevent and mitigate environmental crises” (UNESCO, 2019).  
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32 At the European level, the Ethical Guidelines developed by the EU High-Level Expert Group on AI  
33 (HLEG-AI) include environmental robustness and the protection of societal and environmental  
34 wellbeing among the set of six requirements that AI systems must satisfy to be considered  
35 trustworthy. The Recommendation of the Committee of Ministers of the Council of Europe to  
36 member states on electronic democracy (CM/Rec(2009)1 - Appendix, para. 58), insists that the  
37 design, development, and deployment of AI systems should consider the adoption of an  
38 environmentally friendly and sustainable strategy. This conclusion can be deemed as a corollary of  
39 the principle of integration of environmental protection into EU policies and initiatives, which  
40 represents a cornerstone of EU policy and legal regulations (Kramer, 2016).  
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43 In particular, the principle of integration in EU law should be traced back to the 1995 Report of the  
44 UN Commission on Sustainable Development, according to which “the principle of interrelationship  
45 and integration forms the backbone of sustainable development.” Similar conclusions on the principle  
46 of integration can be found in the *Legal Principles on Environmental Protection and Sustainable  
47 Development* adopted by the World Commission (1987) and the 2000 IUCN Draft Covenant on  
48 Environment and Development. From a legal viewpoint, it is still an open question whether the  
49 principle of integration should be considered as a binding legal obligation, rather than a political  
50 proclamation, or aim of soft law (McIntyre, 2013). The dilemma regards both Art. 3(4) of the 1992  
51 Climate Change Convention and Art. 6 of the 1992 Biodiversity Convention that require States to  
52 integrate “policies and measures to protect the climate system against human-induced change” and  
53 “the conservation and sustainable use of biological diversity” into relevant development plans and  
54 policies, as does Article 4(2)(a) of the 1994 Desertification Convention.  
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58 Against this international framework, what is unique to EU law regards the role of the integration  
59 principle in all its fields. The changes to the EC Treaty introduced by the 1986 Single European Act  
60 (SEA), recognized the principle of integration as a legally binding requirement under EU law. Article

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3 130r, s and t of the SEA conferred for the first-time competence upon the EU institutions to act for  
4 the protection of the environment. This new Treaty stipulation, together with Article 162 of the Treaty  
5 of Rome, required the Commission both to adapt its rules and procedures to the provisions of the  
6 Treaty, and to adopt a procedure for addressing the environmental implications of each EU legislation  
7 proposal. In 1997, the amendments to the EC Treaty, introduced by the Treaty of Amsterdam,  
8 ‘exported’ the integration principle from the environmental field, promoting it as a ‘general principle’  
9 applicable to the entire EC Treaty (Jans, 2010, at 1533). More recently, Art. 11 of the Treaty on the  
10 Functioning of the European Union (TFEU) has followed suit, making copy and paste of Article 6 of  
11 the revised EC Treaty. A slightly different articulation of the integration principle regards Art. 37  
12 CFRs, which provides that “a high level of environmental protection and the improvement of the  
13 quality of the environment must be integrated into the policies of the Union and ensured in accordance  
14 with the principle of sustainable development.”  
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18 Both Art. 11 of the TFEU and Art. 37 of the CFRs bind the EU institutions and its Member States,  
19 when implementing EU policies and activities, to incorporate the objectives of environmental policy  
20 into the definition and implementation of the Union’s sectorial activities under Article 191(1) TFEU  
21 (Krämer, 2012, at 83). These objectives require that EU policies shall contribute to preserving and  
22 improving the quality of the environment, protecting human health, and promoting measures at the  
23 international level, in order to deal with regional or worldwide environmental issues, in particular,  
24 combating climate change and making a prudent and rational use of natural resources. Significantly,  
25 the first paragraph of Article 191(2) requires that Union environmental policies shall be based on the  
26 precautionary principle and proactive actions, so that every “environmental damage should as a  
27 priority be rectified at source and that the polluter should pay.”  
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31 How all this works in practice, however, can appear disappointing. In *Bettati v. Safety Hi-Tech Srl*  
32 (C-341/95), for example, the legitimacy of the so-called Ozone Regulation 3093/94 had to be  
33 determined in accordance with the integration principle. In the opinion of the Court of Justice (CJEU),  
34 the question under scrutiny “by the Court must necessarily be limited to the question whether the  
35 Council, by adopting the Regulation, committed a manifest error of appraisal regarding the conditions  
36 for the application of Article 130r of the Treaty.” The binding power of the integration principle is  
37 thus limited by a crucial fact, namely, each EU institution enjoys “a wide discretion regarding the  
38 measures it chooses to adopt in order to implement the environmental policy.” Therefore, it seems  
39 fair to admit that this “wide discretion” can even be wider in further fields of legal regulation, in  
40 which the environmental requirements are only one of the factors to be considered. The argument fits  
41 like hand into glove with the proliferation of integration principles, under Articles 7–10 and 12–13  
42 of the Lisbon Treaty (Jans, 2010, at 1533): a wide range of policy objectives, in addition to those  
43 relating to the environment, must be considered when defining and implementing every EU policy.  
44 Such dramatic increase in the range and number of interests to be accommodated in the policy-making  
45 process makes the implementation of the integration principle particularly difficult and may even  
46 decrease the relevance that the green initiatives should have in the EU context (McIntyre, 2013, at  
47 116; Jans, 2010, at 1546–1547).  
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51 Considering the troubles with the integration principle in EU law, it is not surprising a certain lack of  
52 coordination with other fields of legal regulation. We already stressed, above in the previous section,  
53 the AIDA Committee’s critics to the first draft of AIA on environmental issues. This lack of  
54 environmental concerns in the AIA and in other regulatory initiatives of the European Commission  
55 seems to reflect a more general trend, detected and scrutinized by scholars and institutions (Ben-  
56 Israel, 2020; Jobin *et al.*, 2019). A human-centric approach to the challenges of AI often overlooks  
57 the onto-centric challenges of AI to environmental law (Pagallo, 2015; Durante, 2017 and 2021). The  
58 risk is to affect the right to a high level of environmental protection and the improvement of the  
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3 quality of the environment, pursuant to Article 37 CFRs. Next section explores how this elephant in  
4 the room may look like.  
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## 6 7 **5. The Elephant in the Room, or the Lack of Environmental Concerns in AI policy papers and** 8 **ethical guidelines** 9

10 We already mentioned that both the green and digital transformations of our society represent a twin  
11 challenge. An environment-friendly, or green AI represents the core of strategies and initiatives  
12 established not only at EU level, but by most of its Member States that aim to guide and foster the  
13 development of AI and coordinate governmental and intergovernmental efforts (Gailhofer *et al.*,  
14 2021). For instance, the aim of the French Strategy for AI includes developing an aggressive data  
15 policy for big data and targeting “the environment” as one of the four strategic sectors, together with  
16 health care, transport and defense. The “AI made in Germany” strategy mentions the public interest  
17 and improving working conditions, as the way to ameliorate people’s lives and protect the  
18 environment. In Italy, the national AI strategy links AI to the implementation of the Sustainable  
19 Development Goals (Vinuesa *et al.*, 2020). There are manifold AI solutions to make the use of  
20 resources (water, electricity and natural gas) sustainable; to reduce polluting emissions (e.g.  
21 monitoring and intelligent management of networks and consumption); to strengthen the circular  
22 economy (e.g. monitoring and predictive management of the waste cycle); or to better prevent natural  
23 disasters.  
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27 Against this framework we should note, however, that most AI policy papers and initiatives, including  
28 the AIA proposal, do not include any assessment of the environmental impact of this technology. For  
29 example, the HAL Index Report monitored 42 US-based prominent organizations that delivered  
30 policy papers on topics related to AI in 2019 and 2020, to conclude that energy and environment have  
31 largely been secondary topics in this context (Zhang *et al.*, 2021). The same holds true for several  
32 ethical guidelines on trustworthy AI in Europe. According to the Ad hoc Committee on Artificial  
33 Intelligence (CAHAI), set up by the Council of Europe, ethical considerations, regarding the principle  
34 of environmental sustainability of AI, have been underrepresented in the mainstream ethical discourse  
35 (Ben-Israel, 2020, at 16). Likewise, among the eleven overarching “ethical clusters” of AI examined  
36 in (Jobin *et al.*, 2019), sustainability is ranked next to the last cluster by order of frequency, i.e., only  
37 a fraction of the documents under scrutiny focused on AI and environmental sustainability.  
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41 This lack of attention to the environmental challenges of AI and the risk to miss the promises of green  
42 AI projects are worrying both ways. On the one hand, we already have evidence of how AI may  
43 negatively affect our environment. Advanced AI technologies require massive computational  
44 resources that are only available through large computing centers. These facilities have a very high  
45 energy requirement and carbon footprint (Sokolowski 2021). Some estimates suggest that the total  
46 electricity demand of information and communication technologies (ICTs) could require up to 20%  
47 of the global electricity demand by 2030, whereas today’s demand revolves around 1% (Jones, 2018).  
48 AI is likely to add growing concerns for the increasing volume of e-waste and the pressure on rare-  
49 earth elements generated by the computing industry (Alonso *et al.*, 2012). E-waste has important  
50 socio-political implications, especially related to developing countries and vulnerable populations  
51 (Heacock *et al.*, 2016). The work of the European Parliament's Special Committee on AI (Gailhofer  
52 *et al.*, 2021), has so far provided only a preliminary assessment on the environmental impact or  
53 footprint of AI technologies (Taddeo *et al.*, 2021).  
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57 On the other hand, we should be attentive to the risk of underusing AI for the protection of our planet.  
58 There are many different reasons why the whole set of benefits and promises of AI can be missed or  
59 exploited far below its full potential in the environmental sector. According to a press release of the  
60 European Parliament, in September 2020, for example, “underuse could derive from public and

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3 business' mistrust in AI, poor infrastructure, lack of initiative, low investments, or, since AI's  
4 machine learning is dependent on data, from fragmented digital markets" (EU Parliament, 2021). Yet,  
5 in addition to the diagnosis of the European Parliament, we reckon that underuses of technology may  
6 depend on the content of specific legal regulations, or on how such legal regulations are coordinated  
7 (Pagallo, 2017). For instance, a whole set of rules, such as Articles 60, 61, 75(4) and 97(2)(b) of the  
8 GDPR have established coordination mechanisms between authorities, and however, this set of  
9 provisions has not prevented the fragmentation of the legal system. Further coordination mechanisms  
10 have been set up by the proposal of a Data Governance Act from December 2020, and the AIA as  
11 well, e.g., Art. 9(9) on the risk of AI systems for credit institutions.  
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15 So, considering these procedural efforts of the EU lawmakers, the question is, are today's legal rules,  
16 both substantial and procedural, good enough to tackle the environmental challenges of AI, i.e., cases  
17 of misuse and overuse that may regard the cooperation between different law enforcement authorities,  
18 and cases of underuse that mostly concern cooperation between public authorities and stakeholders?  
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## 20 21 **6. On disclosure of non-financial information, duties of care, and class actions**

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23 We already stressed, above in Section 4, the CJEU opinion on the principle of environment integration  
24 in EU law, according to which there is room for "wide discretion" as regards how EU institutions and  
25 member states shall implement their own environmental policies. The weakness of the integration  
26 principle goes hand in hand with the lack of attention to the environmental impact of AI in current  
27 policies and AI ethical reports. AI systems may entail high risk effects, although not directly for  
28 humans, but the environment. A new generation of AI eco-impact assessments, as recommended by  
29 AIDA and scholars (Taddeo *et al.*, 2021), it thus welcomed.  
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33 In addition, the list of legal sources that should be considered for green initiatives and sustainable AI  
34 projects should include Directive 2014/95/EU on disclosure of non-financial information. For the first  
35 time ever in some member states, e.g. Italy with the Legislative Decree 254 of 30 December 2016,  
36 new obligations were set up, to provide the public opinion with extensive information on the impact  
37 that company activities have on society: the environment, safety, human rights, etc. The overall idea  
38 is that stakeholders can evaluate business managements, based on values that are not strictly  
39 entrepreneurial. EU law establishes that companies shall provide a series of "information to the extent  
40 necessary for an understanding of the undertaking's development, performance, position and impact  
41 of its activity, relating to, as a minimum, environmental, social and employee matters, respect for  
42 human rights, anti-corruption and bribery matters." The transparency rules of Directive 2014/95/EU  
43 make it clear that corporate social responsibility actions do not simply hinge on self-regulation, for  
44 they entail legal obligations of disclosure. Moreover, this set of obligations means that a company's  
45 managing structure, its internal resources, or external consultants shall increasingly pay attention to  
46 the "environmental impact assessment" of the company's activities, vis-à-vis the expectations of all  
47 stakeholders and the public (Floridi *et al.*, 2019).  
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51 Admittedly, Directive 2014/95/EU has a limited scope of application in our context. It applies only  
52 to large companies (exceeding 500 employees), headquartered in Member States and under strict  
53 conditions, e.g. the economic activities carried out by such companies shall likely have a negative  
54 social and environmental impact of a certain gravity (EU Council, 2011, whereas no. 13). We may  
55 thus imagine few providers of AI systems, or few large AI companies affected by such provisions,  
56 and in any event, the administrative pecuniary sanctions that regard directors, controllers and auditors  
57 who have not complied with the disclosure range from a minimum of € 20,000 to a maximum of €  
58 150,000. The threat of such pecuniary sanctions may hardly provide an adequate disincentive for  
59 violating the information duties. Furthermore, the disclosure of information can also be deceptive, as  
60 in cases of greenwashing (Walker *et al.*, 2012).

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4 However, climate change litigation is gathering momentum. According to the 2020 Report of the  
5 London School of Economics, there were 1,587 cases of climate litigation brought globally as of July  
6 2020 (Setzer *et al.*, 2020). Whilst most cases were discussed in the US, cases are increasing in the  
7 UK and in Europe, whereas the range of claimants is widening (Solana, 2020). Scholars have  
8 extensively discussed the impact of AI on human rights and constitutional law that are also at stake  
9 with lawsuits on climate regulation. How to enforce such rights, as in the case of environmental law  
10 and AI, remains however a topic often overlooked by scholars and institutions (Pagallo, 2020). We  
11 think that procedural rules on class actions and further rights of associations and non-governmental  
12 actors play a crucial role in this context.  
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16 There is some experience of class actions against AI giants, e.g., Facebook, also in civil law  
17 jurisdictions. A traditional legal weapon of US law has been transposed in some member states of the  
18 EU, to reinforce the individualistic approach of data protection in EU law with the safeguards of  
19 consumer law (Barfield and Pagallo, 2020, at 89-91). Moreover, current trends of environmental law  
20 litigation shed light on some human rights obligations of big companies that certainly regard the fat  
21 cats of Silicon Valley. It is well-known that oil and coal companies are increasingly under pressure  
22 by institutional investors to be more transparent about the risks associated with climate change  
23 regulation. A watershed judgment was handed down on 26 May 2021, by the Hague District Court in  
24 the Netherlands. The claimants were various environmental groups asserting that the aggregate  
25 greenhouse gas emissions generated by Shell, via its business operations and products, amounted to  
26 a breach of the standard of care and the duty of corporations to protect human rights, in particular,  
27 the right to life. By referring to the duty of care enshrined in the Dutch Civil Code and the obligation  
28 of companies to limit, or to properly address the human rights impact of their own activities, the Court  
29 ruled that Shell should align its corporate policies with the Paris Agreement: “Shell is ordered to  
30 reduce the CO2 emissions of the Shell Group by a net 45% in 2030, compared to 2019 levels, through  
31 the Shell Group's corporate policy” (C/09/571932 / HA ZA 19-379).  
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36 Current discussions on the new set of constraints and obligations for AI companies, proposed by the  
37 European Commission with the first draft of the AIA, shall then consider the further set of constraints  
38 and obligations that such AI companies may have either (i) on the basis of the “primary rules” of the  
39 law, e.g. Directive 2014/95/EU on disclosure of non-financial information and the duty of care  
40 adopted by most legal systems, or (ii) on the basis of the “secondary rules” of the law, that is, the  
41 procedural rules on class actions and the protection of further rights of associations and non-  
42 governmental organizations. This bunch of rules complement rules and principles of environmental  
43 law and EU constitutional law, such as the integration principle and the principle of sustainability, as  
44 the main legal blocks of the Green Deal between the protection of the planet and AI technologies. It  
45 is because of this framework that we can finally appreciate the kind of balance that has been struck  
46 between current proposals for AI regulation and the protection of fundamental rights, such as the right  
47 to a high level of environmental protection, pursuant to Article 37 CFRs.  
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51 All in all, are the legal premises of today's EU law good enough to support a fair Green Deal between  
52 environmental law, AI investments and the protection of fundamental rights?  
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## 54 7. Conclusions

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56 The analysis revolved around the environmental challenges of AI, distinguishing illicit cases from  
57 the risk of underusing AI technologies for the protection of our planet. We thus insisted on a twofold  
58 problem, namely, how to balance opportunities and threats of AI through top-down regulations, such  
59 as the AIA; and how to balance such regulations with the integration principle of EU constitutional  
60 law. A more robust level of protection for a certain kind of fundamental rights in EU law followed as

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3 a result. Contrary to direct risks to human safety and the ban of certain uses of AI technologies, the  
4 protection of such rights as the right to the improvement of the quality of the environment, pursuant  
5 to Article 37 CFRs, entail the “wider discretion” of lawmakers. The lack of environmental concerns  
6 for the use of AI in recent proposals of the European Commission, e.g. the AIA, is thus the byproduct  
7 of two factors: (i) how lawmaking is organized within the EU institutions, for example, by adopting  
8 a strict sectorial, context-dependent approach to regulations; and, (ii) how this lack of environmental  
9 concern reflects current trends among institutions, expert groups, and scholars that are more attracted  
10 by the human-centric threats of AI, than the environmental challenges of technology. Whereas, from  
11 a philosophical viewpoint, we reckon that this human-centric position is shortsighted, or even wrong,  
12 we add, from a practical stance, four recommendations. They correspond to the different problems of  
13 coordination that current legislative initiatives, such as the AIA, shall address because of their own  
14 human-centric approach.  
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18 A first natural way to improve the Commission’s proposal of AIA concerns a new generation of AI  
19 eco-impact assessments. Such assessments should be pro-active and complement the human-centric  
20 approach of recent EU legislative initiatives with the traditional onto-centric stance of environmental  
21 law. Coordination between other AI assessments in the fields of data protection, health law, finance  
22 or civil aviation further recommend this stance.  
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25 A second step towards a more intensive integration of environmental principles and AI regulations  
26 has to do with the duty of disclosure of non-financial information, including the information necessary  
27 for an understanding of the impact of AI on the environment, as established by Directive 2018/95 for  
28 providers placing AI systems in the market of the Union. Such a duty of disclosure may recommend  
29 companies to carry out their own “environmental impact assessment.”  
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32 Third, regulators will increasingly obtain greater access to data and relevant information, e.g., the  
33 “automatically generated logs” of the AIA’s Art. 20, that is, a new set of obligations that the European  
34 Commission has inserted in the proposal, following the advice of its own legal Group of Experts on  
35 liability and emerging technologies (HLEG, 2019). Disclosed data should be used by regulators to  
36 better allocate risks triggered by AI, which includes the environmental impact and sustainability of  
37 the technology, determining on this basis the parameters of the integration principle for each EU  
38 policy and legal initiative. This approach should likely strengthen the coordination between the  
39 different components of the Green Deal: circular economy, environmental law, fundamental rights,  
40 and the wise regulation of emerging technologies.  
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43 Finally, attention should be drawn to the underuse of AI for environmental purposes. The challenges  
44 of AI do not only include the misuse, or overuse of technology, but rather, the risk that the whole set  
45 of benefits and promises of AI for the protection of our environment can be missed or exploited far  
46 below its full potential. Several initiatives exist, to tackle this risk, and we have mentioned some of  
47 them (ITU, 2018). Still, it seems fair to concede that the risks of underuse – and their corresponding  
48 opportunity costs – persist (Floridi *et al.*, 2018). We already mentioned the 2020 communication of  
49 the European Parliament, according to which the underuse of AI may depend on social distrust, poor  
50 infrastructures, lack of initiative, low investments, and a fragmented digital market (EU Parliament,  
51 2021). Further efforts of coordination, in addition to the coordination mechanisms illustrated in this  
52 paper, should thus be implemented, to address the drivers of such AI underuse. Advancements of  
53 technology and its benefits should not be slowed down, or even opposed, for the wrong reasons.  
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