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# Access to Data for Environmental Purposes: Setting the Scene and Evaluating Recent Changes in EU Data Law

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**ABSTRACT**

Few policy issues will be as defining to the EU's future as its reaction to environmental decline, on the one hand, and digitalisation, on the other. Whereas the former will shape the (quality of) life and health of humans, animals and plants, the latter will define the future competitiveness of the internal market and relatedly, also societal justice and cohesion. Yet, to date, the interconnections between these issues are rarely made explicit, as evidenced by the European Commission's current policy agendas on both matters. With this article, we hope to contribute to, ideally, a soon growing conversation about how to effectively bridge environmental protection and digitalisation. Specifically, we examine how EU law shapes the options of using data—the lifeblood of the digital economy—for environmental sustainability purposes, and ponder the impact of on-going legislative reform.

**KEYWORDS:** data law, European Digital Agenda, European Green Deal, Data Governance Act, Data Act

## 1 DIGITALISATION IN THE INTEREST OF ENVIRONMENTAL SUSTAINABILITY

The EU, as many other jurisdictions across the world, is faced with multiple socio-economic and environmental challenges. Although the European Commission ('Commission') specifies six priorities,[1] its top two dominate its agenda-setting: the European Green Deal[2] and the

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1 European Commission, 'The European Commission's Priorities', available at: <https://ec.europa.eu/info/strategy/priorities-2019-2024_en> accessed 19 December 2022.

2 Communication from the Commission, 'The European Green Deal', COM(2019) 640 Final ('EGD').

Digital Agenda.[3] While there has been an abundance of activity on both, they have largely been coordinated as parallel tracks that hardly intersect. Yet, there is reason to believe that matching digitalisation and environmental concerns is an unavoidable step to bring both agendas forward: whereas digitalisation has been rightly criticised for its lacking regard for environmental concerns,[4] it has also been pointed out that ecological tragedy can no longer be halted but for the use of technology.[5]

There is indeed an overwhelming amount of digital initiatives with an ecological focus, as well as a multitude of uses for green digital innovation. Digital technologies promise better monitoring of environmental impacts and changes, leading to more effective preventive measures, for instance regarding climate change, and ensure more efficient disaster and crisis management, eg, through the inspection of fish stocks[6] or ice melt.[7] To help optimise environmental and resource protection, digital applications can be deployed in predictive maintenance, eg, in the safety management and upkeep of hazardous water treatment and wind power plants,[8] or to reduce consumables and energy consumption.[9] Digitalisation also holds significant transformation potential in agriculture: GPS-controlled software can lead to savings in fuel consumption and optimise the routes of tractors and automatic harvesters, while digital applications for initial and nitrogen fertilisation can contribute to better and more efficient crop management.[10] Whereas the carbon footprint of the Information and Communication Technology (ICT) sector itself is a topic of controversy[11] and regulation[12] (and does not go unmentioned in the European Green Deal),[13] the potential of ICT applications to reduce emissions is expected to surpass the amount created by the ICT sector by seven times (up to 15% of global emissions).[14] Digital applications not only enable optimised energy use, for instance through the installation of smart meters in households, but as intelligent systems, eg, in road traffic, they also promise to reduce congestion and improve mobility. With that in mind, it is not surprising that both the European Green Deal and the European strategy for data[15] address this interconnection on several occasions.

Among its goals for a 'sustainable' transformation of the EU economy, the European Green Deal, for instance, explicitly acknowledges the potential that digital technologies hold in

3 European Commission, 'Digital Agenda for Europe', available at: <https://www.europarl.europa.eu/factsheets/en/sheet/64/digital-agenda-for-europe> accessed 19 December 2022.

4 Rob Toews, 'Deep Learning's Carbon Emissions Problem', *Forbes* (17 July 2020).

5 OECD, 'Policy Brief: Promoting Technological Innovation to Address Climate Change', available at: <https://www.oecd.org/greengrowth/publicationsdocuments/64/> accessed 19 December 2022.

6 Cf. ABB, Künstliche Intelligenz von ABB und Microsoft für eine verantwortungsbewusste und nachhaltige Welternährung (22 January 2020), available at: <https://new.abb.com/news/de/detail/55927/kuenstliche-intelligenz-von-abb-und-microsoft-fuer-eine-verantwortungsbewusste-und-nachhaltige-welternaehrung> accessed 19 December 2022.

7 Cf. EU Copernicus Earth Observation Programme, 'Sea ice', available at: <https://climate.copernicus.eu/sea-ice> accessed 19 September 2022.

8 Cf. Fraunhofer Institute for Material Flow and Logistics/Fraunhofer Institute for Energy Economics and Energy System Technology, 'Predictive Maintenance for Wind Turbines. Energy Data Space Whitepaper 14, available at: <https://www.iee.fraunhofer.de/de/presse-infothek/Presse-Medien/Pressemitteilungen/2020/windenergie_data_space.html> accessed 19 December 2022.

9 Harald Rødseth and Per Schjølberg, 'Data-Driven Predictive Maintenance for Green Manufacturing', *Proceedings of the 6th International Workshop of Advanced Manufacturing and Automation* (Atlantis Press 2016).

10 Fraunhofer Institute for Cognitive Systems IKS, 'Smart Farming: Agriculture in Transition', available at: <https://www.iks.fraunhofer.de/en/topics/smart-farming.html> accessed 19 December 2022; PWC, 'Copernicus Ex-Ante Benefits Assessment. Executive Summary' 11, available at: <https://www.copernicus.eu/sites/default/files/2018-10/Copernicus-Ex-Ante-Executive-Summary_0_6.pdf> accessed 19 December 2022.

11 Charlotte Freitag and others, 'The Real Climate and Transformative Impact of ICT: A Critique of Estimates, Trends, and Regulations' (2021) 2 Patterns 100340.

12 For example, within the framework of the Circular Electronics Initiative.

13 EGD (n 2) 2.1.3(14).

14 European Commission, *Supporting the Green Transition: Shaping Europe's Digital Future* (Publications Office 2020).

15 European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 'A European Strategy for Data', COM(2020) 66 Final.

accelerating and maximising the impact of policies related to deal with climate change, and in protecting the environment.[16]

With the European Green Deal being an integral part of the Commission's strategy to implement the United Nation's 2030 Agenda and the sustainable development goals (SDGs),[17] in using the term 'sustainability', the Commission makes reference to the three-fold sustainability concept of the Rio20+ Conference, which encompasses the promotion of an economically, socially and environmentally sustainable future.[18] However, when it comes to digitalisation, EU policy focuses primarily on the potential of new technologies and the underlying data for environmental interests,[19] an approach we also adopt in this article. In the following, 'environmental sustainability'[20] is therefore best understood through the concept of planetary boundaries,[21] which is used to link sustainability to EU environmental constitutional law,[22] and which determines boundaries that, if respected, are likely to ensure the stability of Earth system conditions. Safeguarding the environment and counteracting the negative effects of climate change are the two main objectives therein.

By pledging 'to support work to unlock the full benefits of the digital transformation to support ecological transition',[23] the Commission is thus making innovation in the field of digital technologies a key factor of effective action against climate change.[24] At first glance, it would therefore seem reasonable to approach this connection with a regulatory focus on digital technologies themselves, eg, through permits, monitoring obligations or certificates.[25] However, another main focus of the EU legislator lies on the environmental potential of regulating the data on which these applications are built. This is reflected in both the European Green Deal and the European strategy for data:

In the context of its goal of 'mobilising research and fostering innovation' as well as the related funding programme 'Horizon Europe',[26] the European Green Deal stresses the key role of access to diversified, high-quality and interoperable data for digital technologies and infrastructure in expanding the capacity to understand and tackle environmental challenges and in facilitating evidence-based policy decisions, thereby setting data access (regulation) for environmental interests in a public sector context as well.[27] The European strategy for data, in turn, solidifies that both data collection carried out under general welfare aspects, including environmental concerns, as well as an easier, more networked exchange and use of data promise to have an impact on climate and environment-related challenges.[28] The establishment of a Common European Green Deal Data Space[29] as part of the Digital Europe Programme (DIGITAL) is supposed to make high-quality data available in support of European Green Deal priority

16 EGD (n 2) 2.1.3(4)(14); 2.2.3(1).
17 EGD (n 2) 1(7).
18 United Nations General Assembly, Resolution adopted by the General Assembly on 27 July 2012, A/RES/66/228.
19 Cf. EGD (n 2) 2.1.3(14).
20 Cf. Ivar A Baste and RT Watson (eds), *Making Peace with Nature: A Scientific Blueprint to Tackle the Climate, Biodiversity and Pollution Emergencies* (United Nations Environment Programme 2021) 119.
21 Cf. Johan Rockström and others, 'A Safe Operating Space for Humanity' (2009) 461 Nature 472. Among the nine identified planetary boundaries are those determined by climate change, ocean acidification, biogeochemical glows in the nitrogen cycle, and the erosion of the biosphere integrity.
22 Cf. Christian Calliess and Miriam Dross, 'Umwelt- und Klimaschutz als integraler Bestandteil der Wirtschaftspolitik' (2020) ZUR 456, 457.
23 EGD (n 2) 2.2.3(4).
24 See in detail Section 2 of this article.
25 Cf. Mario Martini and Hannah Ruschemeier, 'Künstliche Intelligenz als Instrument des Umweltschutzes. Zur rechtlichen Bewertung der Umweltwirkungen intelligenter Technologien' 10 ZUR 515.
26 European Commission, 'Horizon Europe', available at: <https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en> accessed 19 December 2022.
27 EGD (n 2) 2.2.3 (4); 2.1.3(14).
28 A European Strategy for Data (n 15) 4 ('The problems').
29 European Commission, 'The European Green Deal Data Space Vision', available at: <https://digital-strategy.ec.europa.eu/en/events/information-session-preparatory-action-common-european-green-deal-data-space-under-digital-europe>.

actions such as climate change, zero pollution, biodiversity and deforestation. The two initiatives 'GreenData4All'[30] and 'Destination Earth',[31] in turn, will cover concrete actions.

Given the increased relevance of data in environmental contexts and its acknowledgment by the EU legislator, this article is therefore concerned with data as one specific element of that broader relation between digitalisation and the environment, namely the norms applicable to the processing of data for goals of environmental sustainability.

In the EU, environmentally relevant data were first identified as a key regulatory issue in environmental law. Implementing the right to live in a healthy environment granted by the Aarhus Convention,[32] the EU legislator has established a right to access environmental information held by or for public authorities. The possibility for not only private stakeholders but also public authorities to collect and process both public and private sector data for environmental purposes, however, is determined by data law, a legal domain that is rapidly transforming. Whereas EU data law was long predominately data protection law (that only applies to the processing of personal data), there are currently no less than six new regulations or proposals for a regulation that would significantly change the legal treatment of digital data beyond personal data.[33] Here, we focus specifically on the Data Governance Act[34] and the draft Data Act,[35] as they have been presented to take environmental concerns into account[36] and therefore seem most relevant for access to both public and private sector data for ecological purposes. More specifically, we enquire whether these acts, in potentially facilitating the access to and use of data for environmental sustainability, are suitable for realising the European Green Deal's objectives.

We argue that despite the variety of uses of data for environmental purposes in both the public and the private sector, and although a number of EU regulatory instruments address both access to and re-use of environmentally relevant data, it seems, at this point, questionable whether the EU legislator provides effective grounds for data processing in the interest of environmental sustainability. Against the backdrop of the limits posed by the established legal regime on environmentally relevant data, which uses a variety of terms and focuses on data held by public sector bodies, we show that the promises of increased access to restricted or private sector data made through the newly introduced cross-sectorial legal frameworks might not hold true.

To this end, we dedicate Section 2 to both the factual and the legal relationship between data and the environment, and illustrate relevant uses for data for environmental benefits both in the public and the private sector, before detailing what terms the EU legislator currently uses for data of environmental relevance, and in which contexts they emerge. In Section 3, we introduce some of the limits that the current legal status and its restriction to public sector data presently pose to data access and use for environmental purposes, and then go on to explore the ecological potential of the data sharing mechanisms introduced by both the draft Data Act and the Data

30 See Sections 2 and 3.1.

31 See Section 2.1.

32 Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Aarhus Denmark, 25 June 1998 ('Aarhus Convention').

33 These include the Data Governance Act, the draft Data Act, the draft Artificial Intelligence Act, the draft Digital Markets Act, the Digital Services Act and the draft European Health Data Space Regulation.

34 Regulation (EU) 2022/868 of the European Parliament and of the Council of 30 May 2022 on European data governance and amending Regulation (EU) 2018/1724, OJ L 152/1 ('Data Governance Act').

35 Proposal for a Regulation of the European Parliament and of the Council on harmonised rules on fair access to and use of data, COM(2022) 68 final ('Data Act').

36 Cf. Concerning the Draft Data Act, under 'Reasons and objectives for the proposal, 1. Context of the proposal' in the Explanatory Memorandum of the Draft Data Act, data is described as 'an essential resource to secure the green and digital transitions', while under 'Consistency with existing policy provisions in the policy area', the initiative is presented as aiming to enable 'EU public authorities, businesses and citizens to support the transition to a greener and carbon-neutral economy and reducing administrative burden'.

Governance Act. In Section 4, we conclude that there remains considerable room for the EU legislator to enhance the environmental impact of the current data regulation regime.

## 2 DATA AND THE ENVIRONMENT

Having laid out the environmental relevance of data regulation in both the European Green Deal and European strategy for data, the Commission has defined a number of targets as part of the Common Green Deal Data Space. Its intention is to connect currently fragmented and dispersed data from the private and public sectors by, among other objectives, drafting a set of rules of 'legislative, administrative and contractual nature' that determine the rights of access to and use of the data.[37] Within the context of the GreenData4All initiative, already existing frameworks on access to public sector data, such as the Freedom of Access to Information Directive[38] and the INSPIRE Directive,[39] are to be evaluated and possibly reviewed from an environmental angle. At the same time, new regulatory frameworks, such as the Data Governance Act and the draft Data Act, are expected to contribute to a more efficient use of data across sectors to achieve sustainability objectives. Indeed, by determining how environmentally relevant data can be processed, EU data law significantly shapes the realisation of the European Green Deal objectives. To illustrate this point, we first provide an overview of the practical value of different types of data for environmental purposes before briefly recapitulating which existing EU legal frameworks cover environmentally relevant data and which concepts are being used to this end.

### 2.1 The Ecological Promise of Data Processing

While some data are clearly and directly linked to the environment—for example, data on certain emissions levels—the ecological influence of processing data from other areas can be more mediated in nature. As a result, there is a considerable number of data domains with environmental points of contact. Indeed, the aforementioned Green Deal Data Space is only one of a total of twelve Common European Data Spaces set up by the Commission so far,[40] and whereas the Green Deal Data Space is specifically designed to increase the availability and exploitability of environmental (observational) data for EU policy, the processing of data concerning other ecosystems, such as energy, mobility and agriculture—alone or in combination with environmental data—can become equally ecologically relevant. When assessing the environmental relevance of data, a preliminary, non-technical distinction can be drawn based on possible uses for environmental purposes.

A first category includes *data about the environment*, that is; data that reflects the state of the environment, often in relation to a defined space, such as data on the concentration of greenhouse gas emissions along a certain road stretch, or the nitrate content of a particular plot of cultivated land. This category includes, for example, data collected by Copernicus, the EU's Earth observation programme, which offers information drawn from satellites and so-called in-situ

37 European Commission, 'Information session on a preparatory action for the common European Green Deal Data Space under the Digital Europe Programme' (DIGITAL) (15 December 2021), available at:<https://digital-strategy.ec.europa.eu/en/events/information-session-preparatory-action-common-european-green-deal-data-space-under-digital-europe> accessed 19 December 2022.

38 Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC [2003] OJ L041 ('Freedom of Access to Information Directive').

39 Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community [2007] OJ L108 ('INSPIRE').

40 European Commission, 'Commission Staff Working Document on Common European Data Spaces', SWD(2022) 45 Final 1, available at: <https://digital-strategy.ec.europa.eu/en/library/staff-working-document-data-spaces> accessed 19 December 2022.

data, mainly comprising observational data (environmental measurements, eg, atmosphere data, meteorological data, air pollution data, marine data) and geospatial reference data.[41]

Data about the environment collected through Copernicus is intended to be complemented by other non-spatial data, eg, socio-economic data, and data from the Internet of Things (IoT), in order to develop approaches for environmental policies or environmentally-friendly innovations. This kind of data belongs to the second category: *data related to the environment*, that is; data that enables indirect conclusions about the environment to be drawn, or to influence the environment. Examples include traffic data on the emission-generating vehicles along a road section, which can be used to establish correlations with greenhouse gas concentrations and thus provide insights for traffic planning or management, or data on the fertilisation patterns of farmers, which, when contextualised, can contribute to the environmentally-friendly optimisation of cultivation.[42]

While the appetite for data both about the environment and related to the environment is ubiquitous and cross-sectorial, the motives for this need and thus the corresponding data requirements for their efficient use essentially draw a distinction according to whether the data are to be used in the public sector or by private actors.

In the *public sector*, (environmentally relevant) data can generally be applied to create or increase public value through three types of activities: anticipation and planning, delivery, and evaluation and monitoring.[43]

As follows from Article 191(3) Treaty on the Functioning of the European Union (TFEU),[44] data forms the basis for policy design and planning of interventions within the first group of activities (anticipation and planning). More precisely, the idea is that data can improve situational awareness, contribute to a better understanding of causes and variables behind a situation, or allow more accurate prediction and forecast.[45] An example of an initiative primarily aimed at providing public authorities with more information for these purposes, particularly on the impacts of climate change and extreme weather events, their socio-economic effects, as well as possible adaptation and mitigation strategies, is the Destination Earth initiative launched at the end of March 2022 as part of the Green Deal Data Space activity. Its objectives entail the creation of a digital replica of the Earth system and the consolidation of pre-existing datasets on the Earth from a variety of sources, allowing users to access, inter alia, thematic information, services, models and simulations.[46] Moreover, data can help public authorities to ensure the best possible provision of information as part of their informational obligations to citizens and to enable public participation and legal access for citizens on environmental protection issues.[47]

Within the second group of activities (delivery), data can play an important role in achieving environmental goals in that they can help improve the implementation of environmental policies

41 Copernicus, State of Play: Understanding in Situ Data <https://insitu.copernicus.eu/state-of-play/understanding-in-situ-data> accessed 19 December 2022.

42 Below we will discuss the importance of who can access this data and the incentives they have to disclose it.

43 OECD, *The Path to Becoming a Data-Driven Public Sector* (OECD 2019) 60.

44 Which provides that 'in preparing its policy on the environment, the Union shall take account of', inter alia, 'available scientific and technical data'.

45 European Commission, *Towards a European Strategy on Business-to-Government Data Sharing for the Public Interest: Final Report Prepared by the High Level Expert Group on Business to Government Data Sharing* ('HLEG Report on B2G Data Sharing') (Publications Office 2020) 21. For the data collected from Copernicus alone, a number of varying use cases is listed: Copernicus, 'Use cases', available at: <https://www.copernicus.eu/en/use-cases> accessed 19 December 2022.

46 European Commission, 'Destination Earth', available at: <https://digital-strategy.ec.europa.eu/en/policies/destination-earth> accessed 19 December 2022.

47 In the UK-funded Project Future City Glasgow (available at: <https://www.glasgow.gov.uk/futurecities> accessed 19 December 2022), for instance, public sector bodies provided geospatial data to inform citizens via interactive consumption maps. Citizens were able, for example, to compare their energy consumption with that of their neighbours and draw the appropriate conclusions for their own energy consumption behaviour, European Commission, DG Joint Research Centre, 'D02.01.02 Assessment of Economic Opportunities and Barriers Related to Geospatial Data in the Context of the Digital Single Market' (2018) Final Report 71.

and increase the eco-friendliness of public services. Take, for example, the area of mobility and urban planning, where road traffic management is one of the biggest challenges for cities and urban communities, especially when it comes to avoiding traffic congestion, a significant source of air pollution. By using different combinations of mobility data, eg, in algorithm-based applications, municipalities can optimise road logistics and routes and thus significantly influence traffic flows. The data processed in this context can come from a variety of sources: while travel times and delays in traffic are monitored via ground-based sensors like cameras or road sensors, the traffic flow and the occupancy of parking spaces can be measured via real-time data from GPS-enabled navigation systems and mobile phones.[48] Data collected through social media and digital transactions can also play a role, as they do similarly in other areas of public service, eg, in creating environmentally-friendly energy systems.[49]

The third group of data-related public sector activities (evaluation and monitoring), namely improving data collection and data quality on implemented policies, for example, allows both policy makers and stakeholders to assess their effectiveness.[50] The resulting ability to identify potential risks or even adverse effects of a decision or policy at an early stage of implementation can prove crucial especially in environmentally relevant matters.

Attempting to exhaustively list all possible *private sector uses* of data in the environmental interest, in turn, would be love's labour's lost. Just as the possibilities for an ecologically sustainable optimisation of a sector seem infinite, so does the use of data to this end. It is safe to assume that integrated and linked to other data types, the vast majority of data can serve as an underlying component in innovating new products and services, and that environmental technologies are no exception:

In agriculture, when deploying IoT devices and smart farming solutions such as management software, analytics and the cloud, IoT data in particular play a role in finding a sustainable balance between food production and biodiversity protection. Sensors installed in tractors or trucks, or placed in fields, the ground or on crops, collect real-time data, eg, resource-related data (water, fertiliser, fuel consumption) or process-related data (tracks, yield map). As this data is then combined with other data available in the cloud (eg, weather data, aerial images or data on soil relief, as well as proprietary data),[51] additional knowledge can be generated and the farmer can be supported in his decision-making process, eg, by suggestions for a more economical use of resources or more precise harvesting processes.

In the provision of energy services, data used within smart energy management can contribute to resource conservation through reduced energy consumption and smart energy use: Using sensors, the energy performance of buildings can be predicted, measured and monitored in real-time, which can help to determine energy savings. Different data sets, eg, publicly available data on houses, utility usage, and location-based weather conditions, can be combined in advising homeowners to (re-)design their house in a more energy-neutral way by investing in solar panels or a solar water heater.[52] In the energy and gas sector, on the other hand, data on the state of the grid can contribute to improved grid controllability, which in turn conserves resources.[53]

48 Cf. Juan C Herrera and others, 'Evaluation of Traffic Data Obtained via GPS-Enabled Mobile Phones: The Mobile Century Field Experiment' (2010) 18 Transportation Research Part C: Emerging Technologies 568.

49 European Commission (n 45) 13.

50 Charlotte van Ooijen, Barbara Ubaldi and Benjamin Welby, 'A Data-Driven Public Sector: Enabling the Strategic Use of Data for Productive, Inclusive and Trustworthy Governance', *OECD Working Papers on Public Governance*, No 33 (OECD Publishing 2019) 26.

51 Can Atik, 'Data Act: Legal Implications for the Digital Agriculture Sector' [2022] SSRN Electronic Journal 5.

52 Publications Office of the European Union, *The Economic Impact of Open Data: Opportunities for Value Creation in Europe* (Publications Office 2020) 63.

53 Paul Weigel and Manfred Fischedick, 'Digitalisierung aus Nachhaltigkeitssicht—Beispiel Energie- und Gassektor' (2019) 4 gwf Gas+ Energie 46, 47.

While these are only two of many existing and potential intersections between digitalisation and the environment, they are representative of the multitude of environmental use cases of data within different private sector areas. What is more, data sets created throughout environmentally relevant processes can in turn be used to optimise sector-specific practices and user conduct, digital services, and machine production, providing grounds for further innovation.

### 2.2 Environmentally Relevant Data in EU Law

EU (data) law does not distinguish between data of environmental relevance and data without environmental relevance. While a number of already existing instruments regulate access to data, in part specifically in environmental matters,[54] a clearly defined, uniform legal concept for environmentally relevant data does not exist.

Given the widely divergent contexts and purposes of the regulatory instruments—sectorial or cross-sectorial, market- or citizens' rights-oriented—,this is not surprising. Yet, the multiplicity of terms used in relation to environmental data can make it difficult to identify the ecological potential of cross-sectorial data regulation and to determine its role, especially in relation to pre-existing instruments of data access and data use.

Within environmental data regulation, 'environmental information' is a concept established by the Aarhus Convention and the regulatory instruments in its tradition, including the Freedom of Access to Information Directive and the Aarhus Regulation.[55] Their respective objective is to improve environmental protection by increasing public access to and the potential dissemination of environment-related information held by the competent authorities of the Member States or by EU institutions. This is intended not only to increase environmental awareness in society, but also to enable a free exchange of views and effective public participation in decision-making on environmental issues.[56]

Pursuant to Article 2(1)(a) of the Freedom of Access to Information Directive and Article 2(a)(d)(i) of the Aarhus Regulation, the term 'environmental information' includes information in any form 'on the state of the environment, such as air and atmosphere, water, soil, land, landscape and natural sites including wetlands, coastal and marine areas, biological diversity and its components, including genetically modified organisms, and the interaction among these elements'. This covers data conventionally associated with the term 'environmental data' and often used synonymously with it,[57] eg, to refer to data on the composition of the Earth's atmosphere.

Moreover, both the Freedom of Access to Information Directive and the Aarhus Regulation add 'factors, such as substances, energy, noise, radiation or waste [ … ] affecting or likely to affect the elements of the environment' to the concept of environmental information.[58] Greenhouse gas emissions data, for instance, fall into this category.

A variety of measures, such as policies and legislations, and activities affecting or likely to affect the mentioned elements and factors,[59] eg, national climate change laws implementing goals of reducing greenhouse gas emissions, are encompassed, too. Furthermore included are

54 For example, INSPIRE (n 43); Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC [2003] OJ L041; Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020) and repealing Decision No 1982/2006/EC [2006] OJ L347.

55 Regulation (EC) No 1367/2006 of the European Parliament and of the Council of 6 September 2006 on the application of the provisions of the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters to Community institutions and bodies [2006] OJ L264/13 ('Aarhus Regulation'), amended by Regulation (EU) 2021/1767 of the European Parliament and of the Council of 6 October 2021, OJ L 356/1.

56 Recital 1 Freedom of Access to Information Directive (n 38).

57 Cf. European Commission, *Destination Earth* (Publications Office 2022) 2.

58 Article 2(1)(b) Freedom of Access to Information Directive (n 38); Article 2(1)(d)(ii) Aarhus Regulation (n 55).

59 Article 2(1)(c) Freedom of Access to Information Directive, ibid; Article 2(1)(d)(iii), ibid.

reports on the implementation of environmental legislation,[60] as well as cost-benefit and other economic analyses and assumptions used within the framework of the mentioned measures and activities,[61] eg, data on the performance of a technology used to reduce greenhouse gas emissions.

Finally, the term also covers information on 'the state of human health and safety [...] conditions of human life, cultural sites and built structures inasmuch as they are or may be affected by the state of the elements of the environment [...] or, through those elements [...]'.[62] An example in the mentioned context could be data on correlations between emissions and lung diseases in certain areas.

In addition to data around negative impacts or risks to the environment, data that promise a positive impact, ie, a potential for their ecological exploitation, are in principle also encompassed in the term as the wording 'may be affected' or 'likely to be affected' does not necessarily presuppose a negative impact on the environment. This is confirmed by a purposive interpretation of these regulatory instruments as they were designed to enable effective participation in decision-making. The possible use of such data, eg, in citizen science projects, could moreover promote social environmental awareness in environmental matters. It is hence unsurprising that the Court of Justice of the European Union (CJEU) has embraced a broad interpretation of environmental information, according to which information on positive environmental effects may also be covered ('activities or measures which may adversely affect or protect [...] environmental aspects'[63]), so long as these do not remain purely hypothetical,[64] along with 'documents which are not related to carrying out a public service'.[65]

The material scope of the Aarhus instruments thus covers all conceivable data on the environment or in connection with environmental phenomena and measures, leading to an even indirect reference to the environment being sufficient to open the scope of application of these instruments. However, their potential for harnessing data for environmental purposes beyond public participation in environmental policy remains limited, as explained in Section 3.1.

The goal of creating a better basis for environmental policy-making is also pursued by the sectorial INSPIRE Directive, which aims to establish a common spatial data infrastructure. It builds upon infrastructures for spatial information established and operated by the Member States[66] and obliges them to make spatial data available in an interoperable manner via network services and thus across the various administrative units.

Article 3 No. 2 INSPIRE Directive introduces the term 'spatial data' for this purpose, which is used interchangeably in the Commission's programs with 'location data', 'geospatial data' or 'geodata'.[67] This concept is narrower than that of 'environmental information' as it refers to 'any data with a direct or indirect reference to a specific location or geographical area'. It includes basic information on topography, eg, the course of bodies of water, as well as technical or factual

60 Article 2(1)(d) Freedom of Access to Information Directive, ibid; Article 2(1)(d)(iv), ibid.

61 Article 2(1)(e) Freedom of Access to Information Directive (n 38), Article 2(1)(d)(v) Aarhus Regulation (n 55).

62 Article 2(1)(f) Freedom of Access to Information Directive, ibid; Article 2(1)(d)(vi) Aarhus Regulation, ibid.

63 See eg, Case C-321/96 *Mecklenburg v Kreis Pinneberg* [1998] ECR I-03809, para. 19, on the Council Directive 90/313/EEC of June 1990 on the freedom of access to information on the environment: 'Article 2(a) of the directive includes under 'information relating to the environment' any information on the state of the various aspects of the environment mentioned therein as well as on activities or measures which may adversely affect or protect those aspects'.

64 Case 442/14 *Bayer CropScience and Stichling De Bijenstichting* [2016] ECR 890, paras 77–81: 'emissions into the environment' (…) must be interpreted as including, inter alia, the release into the environment of products or substances (…) to the extent that that release is actual or foreseeable under normal or realistic conditions of use'.

65 Case C-233/00 *Commission of the European Committees v France* [2016] ECR I-06625, paras 44, 47.

66 Article 2(1) INSPIRE Directive (n 39).

67 European Commission, 'European Location Interoperability Solutions for e-Government', available at: <https://joinup.ec.europa.eu/collection/elise-european-location-interoperability-solutions-e-government/glossary/term/spatial-data> accessed 19 December 2022.

data from a specific subject area, such as soil science, city planning or climatology, requiring a spatial reference in each case.

While the instruments presented so far relate to the regulation of data specifically in the environmental context, environmentally relevant data can also be covered by cross-sectorial data regulations. The Open Data Directive[68] aims, among other things, at harmonising the conditions for the re-use of data held by the public sector, eg, by introducing formats and charging.[69] In contrast, the Data Governance Act relates to both data held by public sector bodies, as well as private sector data.

In the Open Data Directive, the term 'documents' serves as a reference point, which means '(a) any content whatever its medium [...]; or (b) any part of such content'.[70] Therefore, all environmentally relevant data is in principle covered by the Directive, provided that it is public sector data,[71] meaning information held by public sector bodies or public undertakings[72] or research data,[73] and provided that its access is not restricted by the exclusions of Article 1(2).[74]

Interestingly, the Directive establishes a conceptual differentiation by introducing 'high-value datasets' (HVDs), a term referring to documents 'the re-use of which is associated with important benefits for society, the environment and the economy, in particular because of their suitability for the creation of value-added services, applications and new, high-quality and decent jobs, and of the number of potential beneficiaries of the value-added services and applications based on those datasets'.[75] Just recently, the Commission has passed the corresponding Implementing Act, hereby creating a *sui generis* regime for HVDs.[76] The Act specifies those datasets that public sector organisations will have to make available free of charge and, inter alia, in a format guaranteeing easy accessibility, notably in machine-readable format and via Application Programming Interfaces (APIs).[77] Both Annex I to the Open Data Directive and the Annex to the Implementing Act list 'geospatial data', 'earth observation and environment data', 'meteorological data' and 'mobility data' among the thematic categories of HVDs, all of which are strongly related to EU climate action[78] and are expected to support research, digital innovation and improved policy-making in this regard.[79]

In introducing them, the Open Data Directive facilitates the identification and grouping of those data sets that are potentially environmentally relevant, with their relevance deriving in abstract from their potential for the environment in the context of their further use, rather

68 Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information (recast) [2019] OJ L 172/56 ('Open Data Directive').

69 A further regulatory purpose is to prevent distortions of competition in the European internal market by the public sector with regard to value-added services developed and offered on the basis of public sector data.

70 Article 2(6) Open Data Directive (n 68).

71 In addition to the term 'documents', the term 'data' also appears in Article 2; however, only in combinations (eg, 'dynamic data', 'research data', 'personal data'), among which the first two are defined with recourse to the term 'documents'.

72 Article 1(1)(a)(b) Open Data Directive (n 68).

73 Arts. 1(1)(c), 10 Open Data Directive, ibid.

74 These essentially list non-public, non-free-access documents.

75 Article 2 No. 10 Open Data Directive (n 68).

76 Commission Implementing Regulation (EU) 2023/138 of 21 December 2022 laying down a list of specific high-value datasets and the arrangements for their publication and re-use, C/2022/9562, OJ L 19 ('Implementing Act'); European Commission, 'Commission Defines High-Value Datasets to Be Made Available for Re-Use' (20 January 2023) <https://digital-strategy.ec.europa.eu/en/news/commission-defines-high-value-datasets-be-made-available-re-use?pk_source=ec_newsroom&pk_medium=email&pk_campaign=Shaping%20Europe%27s%20Digital%20Future%20website%20updates>.

77 Cf. Article 14(1) Open Data Directive (n 68).

78 European Commission, Commission Staff Working Document, Executive Summary of the Impact Assessment Report Accompanying the Commission Implementing Act', SWD(2022) 433 Final' 2. European Commission, *Impact Assessment Study on the List of High Value Datasets to Be Made Available by the Member States under the Open Data Directive* (Publications Office 2020) 40, 63 f., 92 f.

79 European Commission, 'Commission Defines High-Value Datasets' (n 76).

than from the mere fact that the data reflect the state of the environment, as in Article 2(1)(a) Freedom of Access to Information Directive, Article 2(1)(d)(i) Aarhus Regulation, and Article 3 No. 2 INSPIRE Directive. That said, it should be remembered that the definition of HVDs is only indicative of the data that the Commission considers should be made more readily available, without excluding the possible factual environmental relevance of data that has, until now,[80] not been included in the HVDs.

In contrast, the new cross-sectorial instruments, the Data Governance Act and the draft Data Act, which are meant to complement the existing framework, rely on an omnibus concept of 'data' without introducing their own subcategories while including access-restricted private sector data. Data, in their respective context, 'means any digital representation of acts, facts or information and any compilation of such [...], including in the form of sound, visual or audiovisual recording'.[81] There is no terminological differentiation according to the reference point of the data or the purpose of the data collection or further use; the only distinction made is that between non-personal data and personal data.[82]

The terminological and conceptual variety of data with potential relevance for environmental sustainability makes it burdensome to acquire a clear overview of the respective relevance and scope of different regulatory instruments. Introducing a uniform concept of environmental data, if necessary with recourse to direct reference points of the data to the environment or to potential environmental uses of data, may be envisaged as a solution that could, inter alia, increase political and societal awareness of data's environmental potential. Overall, however, the added value of such a unified concept seems questionable. Indeed, as can also be observed in discussions around the concept of (non-)personal data, delineation difficulties would arise and cast doubt on the promised benefits of such a categorisation. At any rate, a categorisation that presupposes the ecological utility of data or their relation to the environment will reach its limits as soon as we enter an age of 'smart environments', in which presumably any information could be related to any concern, including those of an environmental nature.[83]

## 3. CURRENT LIMITS TO DATA SHARING IN EU LAW AND THE POTENTIAL OF RECENT REFORMS TO IMPROVE DATA SHARING FOR PURPOSES OF ENVIRONMENTAL SUSTAINABILITY

This article has so far introduced various categories of data that can be processed for purposes of environmental sustainability, as well as the potential of such processing, and in this way, illustrated the environmental relevance of data regulation. We now turn to examine existing barriers in EU data regulation to exploring the full potential of such data. To this end, we will focus in particular on the recently enacted Data Governance Act, as well as the draft Data Act. Whereas a comprehensive analysis of all relevant EU data law norms would exceed the scope of the present study, we zoom in on these two legal instruments, as they indeed have been explicitly presented as having the potential to facilitate access to and sharing of data, also in view of furthering environmental sustainability objectives.[84]

80 The thematic range of HVDs can be extended by the Commission at a later stage in order to reflect technological or market developments.

81 Article 2 No. 1 Data Governance Act (n 34), Article 2(1) Draft Data Act (n 35).

82 Article 2 No. 3, 4 Data Governance Act, ibid.

83 Nadezhda Purtova, 'The Law of Everything. Broad Concept of Personal Data and Future of EU Data Protection Law' (2018) 10 Law, Innovation and Technology 40.

84 Cf. European Commission (n 36).

### 3.1 Limitations of the Current Data Sharing Regime

The immense importance of data in the digital age results not least from its non-rivalrous and non-excludable nature, which is often considered to be the fundamental driver of socio-economic welfare gains in data sharing operations.[85] In principle, many different actors can use and re-use the same data set, at the same time, for a variety of different purposes, and for an unlimited number of times, without the processed data losing quality or quantity. Moreover, by (re) combining data sets that are originally collected for different purposes, new benefits that were unimagined at the time of the original data collection or processing may reveal themselves.

A regulatory framework that allows data to be shared[86] and reused as widely as possible—taking into account any conflicting interests such as data protection—can also stimulate research, innovation and policy-making from the point of view of environmental sustainability. For example, by contributing to a better availability of public spatial and environmental data previously collected for policy-making, public sector bodies could enable businesses and individuals to reduce their carbon footprint in mobility contexts, or optimise the location of wind and solar farms.[87] Conversely, the provision of private sector data could assist public sector bodies in fulfilling their missions, including combating climate change, in a more informed and effective manner.[88] Even concerns specific to different private sectors—such as the lock-in of farmers, the unanswered data needs of small market players or the fragmentation of data sets in the agricultural sector[89]—could be addressed if private actors were (incentivised or obliged) to share their data among each other and with governments.

Despite the broad material scope of the Aarhus instruments and the Open Data Directive, their relevance to the sharing of data for environmental purposes beyond environmental policy-making remains limited. The Open Data Directive only standardises the conditions for the further or subsequent use of data held by the public sector that is already accessible without restrictions ('open data'). A look at the long list of exclusions from the material scope of the Directive reveals that data of potential value is likely to be excluded from the current Open Data policy to a considerable extent.[90] In line with this, under the framework of the GreenData4All initiative, both the Open Data Directive and the INSPIRE Directive are currently under review, namely in order 'to promote the active dissemination and sharing of government- and private-held public data in support of the environmental acquis and the European Green Deal objectives'.[91] It is also in this context that the Data Governance Act, in its Chapter II, introduces complementary conditions on the re-use of restricted-access public sector data.

85 Bertin Martens and Nestor Duch-Brown, 'The Economics of Business-to-Government Data Sharing' (2020) Digital Economy Working Paper 202004 European Commission. JCR Technical Report 8 <https://joint-research-centre.ec.europa.eu/publications/economics-business-government-data-sharing_en>.

86 Pursuant to Article 2(10) Data Governance Act (n 34), data sharing means 'the provision of data by a data subject or a data holder to a data user for the purpose of the joint or individual use of such data, based on voluntary agreements or Union or national law directly or through an intermediary, for example under open or commercial licenses subject to a free or free of charge'.

87 European Commission, 'Inception Impact Assessment on the Implementing act on a list of High Value Datasets', Ref. Ares(2020)3977569 (2020) 4.

88 A European Strategy for Data (n 15) 6, 7f.

89 Can Atik, 'Towards Comprehensive European Agricultural Data Governance: Moving Beyond the "Data Ownership" Debate' (2022) 53 IIC - International Review of Intellectual Property and Competition Law 701, 5 f.

90 Article 1(2) Open Data Directive (n 68); Andreas Hartl and Anna Ludin, 'Recht der Datenzugänge. Was die Datenstrategien der EU sowie der Bundesregierung für die Gesetzgebung erwarten lassen' 2021 MMR 534, 534.

91 European Parliament, 'GreenData4All—Revision of the Directive Establishing an Infrastructure for Spatial Information in the EU (INSPIRE) and the Directive on Public Access to Environmental Information (REFIT)' (*Legislative Train Schedule*, 11 July 2022) available at: <https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/file-revision-of-the-inspire-directive> accessed 10 January 2023.

Another reason for the currently limited significance of publicly available data in the context of environmentally relevant innovations is likely to be the data scarcity among public bodies compared to that of private actors, as the vast majority of potentially profitable data generally lies in the hands of the private sector.[92] Companies collect data sets via online platforms, transport services, energy providers, and other entities, mostly in the form of even purely passively generated data sets, with which the data collected by national statistical institutions and governments can neither qualitatively nor quantitatively compete. This holds true especially for behavioural data (eg, GPS location, data from mobile phones or social media).[93] In contrast, there is no general, cross-sectorial information collection obligation for public sector bodies at EU level. The Open Data Directive introduces neither collection obligations nor access rights nor provision obligations for the data it encompasses. Additionally, some public interest purposes, including environmental sustainability, require a significant degree of data variety, either due to the complexity of the intended purpose of data use, or in order to ensure the representativeness of the results. They therefore essentially rely on access to many data sets from different private actors, a need unlikely to be fulfilled through public procurement procedures.[94]

Private actors, in turn, remain reluctant to share the data they have collected and to move away from the current status quo, according to which there are no mandatory regulatory frameworks for data sharing between private parties or vis-à-vis public authorities, and where instead, the main tool consists in highly restrictive and often exclusive data exchange agreements.[95] Concerns voiced by private actors towards B2G (business-to-government) data sharing often refer to the high transaction costs in establishing suitable data sharing arrangements with public sector bodies.[96] Ex post risks regarding commercial confidentiality, data security,[97] and the considerable legal uncertainty as to how and to what extent the General Data Protection Regulation[98] (GDPR) applies when sharing data with other actors, in turn, are points of criticism brought up in both B2G and B2B (business-to-business) relationships.

This state of affairs has led to discussions about data sharing and re-use, especially B2G, which have now found their reflection in two of the new cross-sectorial data regulations: the draft Data Act provides for a data sharing obligation for private companies upon request by public authorities for so-called 'exceptional needs'.[99] The Data Governance Act, in turn, incentivises voluntary data sharing in the form of data altruism, one of the various concepts based on the emerging consensus on the need to unlock privately held data for social welfare benefits through an EU regulatory framework.[100] Whether and to what extent the data made available to public sector bodies under these provisions could then, in turn, find their way into the public

92 There, mainly in the hands of a few corporations that determine the digital markets as gatekeepers—a circumstance that the recently passed Digital Markets Act addresses, Regulation (EU) 2022/195 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828, OJ L 265/1 ('Digital Markets Act').

93 HLEG Report on B2G Data Sharing (n 45) 14.

94 Bertin Martens and Nestor Duch-Brown, 'The Economics of Business-to-Government Data Sharing' (2020) Digital Economy Working Paper 2020-04 ( Joint Research Centre; European Commission) 15 <https://joint-research-centre.ec.europa.eu/system/files/2020-02/jrc119947.pdf> accessed 22 December 2022.

95 HLEG Report on B2G Data Sharing (n 45) 31.

96 ibid 34.

97 Edward Helderop, Tony H Grubesic and Tooran Alizadeh, 'Data Deluge or Data Trickle? Difficulties in Acquiring Public Data for Telecommunications Policy Analysis' (2019) 35 The Information Society 69; Iryna Susha, Åke Grönlund and Rob Van Tulder, 'Data Driven Social Partnerships: Exploring an Emergent Trend in Search of Research Challenges and Questions' (2019) 36 Government Information Quarterly 112.

98 Regulation (EU) 2017/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, OJ L 119/1 ('General Data Protection Regulation').

99 Article 15 draft Data Act (n 35).

100 HLEG Report on B2G Data Sharing (n 45) 15 f.

sector data pool, which would allow private actors to re-use them for environmental purposes, remains to be determined.

### 3.2 The Draft Data Act

The draft Data Act is a proposal for a horizontal, cross-sectorial EU regulation that would create new mechanisms designed to incentivise access to and sharing of data in the Digital Single Market in reaction to recent debates about the need to increase the availability of data in order to stimulate data-driven innovation. As such, the draft Data Act is not explicitly a norm about sustainability. Notwithstanding, some of its mechanisms could be used to facilitate access to data for related purposes.[101] This analysis focuses on two of the draft Data Act's various components that seem particularly relevant for the environmental context: a new portability right that would create a new form of voluntary data sharing in business-to-consumer (B2C) and B2B contexts, as well as a new mandatory data sharing regime in B2G relations.

#### *3.2.1 Voluntary data sharing in B2C or B2B contexts*

The first mechanism foreseen by the draft Data Act (which does not change existing sectorial norms and leaves the door open for additional sectorial norms in the future) are harmonised rules for making data generated by the use of connected products and related services (so, products and services related to the Internet of Things) available to either users thereof or third parties. This would in essence be a new portability right, complementing the right to personal data portability in Article 20 GDPR. Although this is a general mechanism with a predominantly economic aim, the draft Data Act also explicitly recognises that such data can 'support innovation and the development of digital and other services protecting the environment, health and the circular economy' such as through the repair and maintenance of the products in question.[102] Given that data can be requested for any purpose, we can also imagine other usages of such data that would realise environmental objectives. For instance, users could choose to make their IoT data available to companies that develop products expected to have environmental benefits, such as a farmer sharing device data about fertiliser use with an entity that seeks to make such use more efficient. Yet, as will be seen below, the draft regulation contains numerous limitations that are likely to diminish its practical impact, both in general as well as in relation to environmental sustainability.

The draft Data Act indeed foresees that data obtained under the voluntary data sharing regime can be used for 'any lawful purpose'[103] by the data user whereas third parties can use such data for 'purposes agreed with the user'.[104] It has been stressed that this approach goes further than the purpose-bound approach suggested by the Impact Assessment report of the draft Data Act and that the EU legislator should follow this approach as there is 'no justification for opening up this right' primarily designed for opening up aftermarkets.[105] From a sustainability perspective, this is, in principle, a welcome opening of the provision as it makes it possible to use data beyond the pure provision of aftermarket services.[106] A more detailed look at the various

101 Recital 1 of the draft Data Act (n 35) recognises that 'high quality and interoperable data sets increase competitiveness, innovation and *sustainable* economic growth' (emphasis added).

102 Recital 14, ibid.

103 Recital 28, ibid.

104 Article 6(1), ibid.

105 Josef Drexl and others, 'Position Statement of the Max Planck Institute for Innovation and Competition of 25 May 2022 on the Commission's Proposal of 23 February 2022 for a Regulation on Harmonised Rules on Fair Access to and Use of Data (Data Act)' 9, available at: <https://pure.mpg.de/rest/items/item_3388757_4/component/file_3395639/content> accessed 19 December 2022.

106 These services can, of course, also have an element of environmental sustainability in and of themselves, such as where they enable a longer life cycle of the product, its recycling or generally a circular economy.

provisions, however, unveils that the potential of the draft Data Act for environmental sustainability purposes nonetheless remains of a limited nature.

The new portability regime would be governed by Articles 3–8 of the draft Data Act, which creates an obligation to make data generated by the use of products or related services available. Pursuant to Article 3(1), IoT products and related services that fall within the draft Data Act's material scope shall be designed and manufactured and related services provided 'in such a manner that data generated by their use are, by default, easily, securely and, where relevant and appropriate, directly accessible to the user'.[107] This seemingly general provision is, however, restricted by considerable limitations. First, this obligation only applies to data generated by IoT devices, not by the use of products primarily designed to display, play, record or transmit content (such as personal computers, tablets and smartphones).[108] Second, it applies exclusively to data holders. The legal definition of the data holder in turn implies that only natural or legal persons having (1) a right or obligation to make available certain data as well as (in the case of non-personal data) or (2) the ability to make data available 'through the control of the technical design of the product' are data holders.[109] This creates an opening for providers of IoT devices to structure their techno-organisational systems in a manner that excludes control over the system.

Article 4 establishes the corollary to the obligation in Article 3(1) of the draft Data Act in providing that users of such products have a right to access and use data generated by the use of a product or service 'without undue delay, free of charge, and, where applicable, continuously and in real-time'.[110] This shall be done 'on the basis of a simple request through electronic means where technically feasible'.[111] Data holders are not entitled to require data users to provide information beyond what is necessary 'to verify the quality as a user'.[112] Furthermore, the data holder shall not keep information on the user's requested access beyond what is necessary for the execution of the request as well as for the security and maintenance of the data infrastructure.[113] Data holders shall moreover not disclose trade secrets unless 'all specific necessary measures are taken to preserve the confidentiality of trade secrets in particular with respect to third parties'[114] nor use the data in order to 'develop a product that competes with the product from which the data originate'.[115] This would presumably include the development of similar products that are more sustainable versions of the original product.

Importantly, the draft Data Act also creates rights for users, or parties acting on behalf of them, to share data with third parties 'without undue delay, free of charge to the user, of the same quality as is available to the data holder and, where applicable, continuously and in real-time'.[116] Third parties shall process the data obtained under the new mechanism 'only for the purposes and under the conditions agreed with the user'[117] as well as 'subject to the rights of the data subject insofar as personal data are concerned'[118] and delete the data when they are no longer necessary for the agreed purpose.[119] Third parties are subject to some limitations regarding the data they obtain in this manner,[120] including that they cannot use the data they receive to develop products competing with products from which the accessed data originate or share the data with another third party for that purpose.[121] This again presumably includes

107 Article 3(1) of the draft Data Act (n 35).
108 Articles 2(2) and Recital 15, ibid.
109 Article 2(6), ibid.
110 Article 4(1), ibid.
111 Article 4(1), ibid.
112 Article 4(2), ibid.
113 Article 4(2), ibid.
114 Article 4(3), ibid.
115 Article 4(4), ibid.
116 Article 5(1), ibid. Note that this excludes parties designated as gatekeepers under the Digital Markets Act (n 92).
117 Article 6(1), ibid.
118 ibid.
119 ibid.
120 See Articles 6(2)(2) ff, ibid.
121 Article 6(2)(e), ibid.

the development of more sustainable forms of the same product. It should also be noted that the draft Data Act's portability mechanism does not apply to data generated by the use of products or related services that are provided by micro and small enterprises.[122] This horizontal, cross-sectorial regime, however, suffers from a number of limitations. We focus only on those most relevant to our topic of enquiry.[123]

First, there is the narrow definition of who qualifies as a data holder under the draft regulation.[124] The legal definition of the data holder indeed implies that only natural or legal persons who either have (1) a right or obligation to make available certain data as well as (in the case of non-personal data) or (2) the ability to make data available 'through the control of the technical design of the product'.[125] Producers of the product who would typically exercise this kind of technical control can, however, also (choose to) structure their techno-organisation data ecosystems in a way to fall outside the scope of the Act.

Second, the draft Data Act's definition of products is also narrow in that the current definition[126] excludes products primarily designed to display, play, record or transmit content (such as personal computers, tablets and smartphones).[127]

Third, inferred data is outside the scope of the draft Data Act although this has been a persistent point of criticism in relation to the more limited right to data portability in Article 20 GDPR.[128] This right enables data subjects to, in some limited circumstances, receive their personal data from a data controller (and potentially transmit it directly to another controller). Yet, according to the Article 29 Working Party,[129] inferred data such profiles that are created about the data subject on the basis of her behaviour remain outside the scope of this right, significantly limiting its practical impact.[130]

Fourth, the draft Data Act does not touch the foundations of data holders' current techno-organisational sovereignty over the data they hold. It remains up to the data holder to determine what data is processed, in what format it is stored and also how it ought to be made available to the data user. Indeed, data holders can choose to make data available only through 'a computing instance of the manufacturer'.[131]

Fifth, the draft Data Act requires the existence of a contract between the data holder and user as well as with the third party. This requirement has been criticised for lacking legal justification[132] and economists have pinpointed that the resulting increase in transaction costs are likely to make the Act 'weak and largely ineffective'.[133]

Finally, and maybe most significantly, the draft Data Act hence creates a new form of voluntary data sharing that is dependent on the initiative of users. Experience in data law so far has, however, shown the limited reach of individual rights the realisation of which is dependent on personal initiative.[134] A similar fate might await the draft Data Act, unless there are stronger incentives for individuals to exercise their rights and better technical interfaces that make it

122 Article 7(1), ibid.
123 Other limitations and uncertainties for example relate to the uncertain relation between the draft Data Act and the GDPR, a topic that will certainly be examined in detail elsewhere over the coming years.
124 Article 2(6) of the draft Data Act (n 35).
125 ibid.
126 Article 2(2), ibid.
127 Recital 15, ibid.
128 Recital 14, ibid.
129 This entity has now been replaced by the European Data Protection Board.
130 Article 29 Data Protection Working Party, 'Guidelines on the Right to Data Portability' 10 f. <https://ec.europa.eu/newsroom/article29/items/611233> accessed 22 December 2022.
131 Recital 21 of the draft Data Act (n 35).
132 Louisa Specht-Riemenschneider, 'Data Act—Auf dem (Holz-)Weg zu mehr Dateninnovation' [2022] ZPR 137.
133 Wolfgang Kerber, 'Governance of IoT Data: Why the EU Data Act Will Not Fulfil Its Objectives' [2022] SSRN Electronic Journal, available at: <https://www.ssrn.com/abstract=4080436> accessed 19 December 2022.
134 See, eg, the limited reliance by data subjects on their rights under the GDPR.

easy for them to do so.[135] As such it is questionable whether this new voluntary data sharing mechanism can really have any systemic effects on the availability of data to further aims of environmental sustainability.

### *3.2.2 A limited form of mandatory B2G data sharing*

Article 14 of the draft Data Act would moreover create a (limited) form of compulsory data sharing in B2G settings. It provides that, upon request, 'a data holder shall make data available to a public sector body or to a Union institution, agency or body demonstrating an *exceptional need to* use the data requested'.[136] Micro and small undertakings[137] are again exempted from this obligation.[138]

This new form of data access shall enable public authorities at EU and national level to access data held by the private sector in cases of 'exceptional need', raising the question of how this concept is defined. Article 15 provides that an exceptional need can be deemed to exist where data is necessary to respond, prevent or assist recovery from a *public emergency*,[139] which refers to 'an exceptional situation negatively affecting the population of the Union, a Member State or part of it, with a risk of serious and lasting repercussions on living conditions or economic stability, or the substantial degradation of economic assets in the Union or the relevant Member State(s)'.[140]

The Union legislator deems that in a public emergency, which explicitly includes 'emergencies resulting from environmental degradation and major natural disasters including those aggravated by climate change',[141] the public interest in the use of the data outweighs the interests of data holders to dispose freely of this data[142] and is intended to help public authorities 'respond to, prevent or recover from public emergencies or to maintain the capacity to fulfil specific tasks explicitly provided by law'.[143]

The burden to demonstrate the exceptional need[144] and the specification of what data are required, the purpose of the request as well as the intended use of the data[145] rests upon public authorities, who must explain these elements clearly 'while allowing appropriate flexibility for the requesting entity to perform its tasks in the public interest'.[146] The modalities of declaring an event as a public emergency is determined according to the 'respective procedures in the Member States or of relevant international organisations'.[147] There will obviously be variation depending on the kind of situation as well as the Member State in question when it comes to declaring an emergency. Generally, it is worth wondering to what extent this can really encompass environmental events. Climate change or mass extinction are examples that spring to mind. Whereas these very much are emergencies in the sense that they threaten (current forms of) human life as well as local ecosystems, they also develop over a longer time-frame. Can this kind of 'chronic' problem, which has been recognised in Intergovernmental Panel on Climate Change reports for many years, be considered to be an 'exceptional situation' as terrorist attacks

135 Personal Information Management Systems could help individuals exercise these rights. Helen Janssen and Jatinder Singh, 'Personal Information Management Systems' (2022) 11 Internet Policy Review, available at: <https://policyreview.info/glossary/personal-information-management-systems> accessed 19 December 2022.
136 Article 14(1) of the draft Data Act (n 35).
137 As defined in Article 2 of the Annex to Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises 2003/361/EC [2003] OJ L124.
138 Article 14(2) of the draft Data Act (n 35).
139 Article 15(a) and (b), ibid.
140 Article 2(10), ibid.
141 Recital 57, ibid.
142 ibid.
143 Recital 62, ibid.
144 Article 17(1)(b), ibid.
145 Article 17(1)(c), ibid.
146 Recital 61, ibid.
147 ibid.

might be? To take biodiversity as another example, the Convention on Biological Diversity, which aims to counteract mass extinction, declares in its preamble that 'biological diversity is being significantly reduced by certain human activities'. As such, this phenomenon, which cannot be nailed down to singular events, cannot quite be described as an 'exceptional' situation, raising the question of whether public authorities can make use of the draft Data Act although such events are arguably more of an emergency on a societal scale than one-off events such as terrorist or cybersecurity attacks.

Beyond, Article 15 enables public authorities to access data in the absence of a public emergency where this will enable it to fulfil a specific task in the *public interest* that has been explicitly provided by law and which they could not fulfil without the data. It must, moreover, be impossible to obtain such data through alternative means (such as by purchasing the data or accessing it through other access rights) or where obtaining the data through this clause substantially reduces the administrative burden for data holders or other enterprises.[148]

The public interest clause only applies where public authorities are faced with a lack of data. The draft regulation does not, however, specify relevant thresholds in this respect. It requires that public authorities must be able to achieve a 'specific task' without specifying what this specificity requirement can relate to. Returning to the biodiversity and climate change challenges above, no single task will be able to solve these systemic issues. Does this prevent public authorities from relying on the public interest clause where the data in question would allow them to gain knowledge or solve one specific expression of these global issues? It would seem so, given that the draft regulation provides that 'public emergencies are rare events'—the opposite of the chronic, long-term and systemic nature of climate change and biodiversity loss.[149] More clarity on these issues is important, particularly also since public authorities requesting data under this mechanism need to comply with numerous requirements,[150] including making sure that the request for data needs to be 'proportionate to the exceptional need', eg, in terms of the granularity, frequency and volume of data requested.[151]

Further uncertainties arise in respect of the re-use of data made available to public authorities under the emergency clause. Overall, the draft Data Act is based on the assumption that data collected in one context can be used in another.[152] Data obtained through the emergency clauses can, however, in principle not be explored for further use unless the data holder making data available explicitly agrees to this.[153] An exception applies where public authorities share the data with 'individuals or organisations in view of carrying out scientific research or analytics compatible with the purpose for which the data was requested' or for the compilation of official statistics.[154] This, however, only seems to hold where the scientific research in question allows for the performance of analysis that the public authority cannot perform itself.[155] Beyond, the data obtained through the emergence clauses does not become subject to the Open Data Directive so that third parties cannot obtain access to it.[156]

148 Article 15(c), ibid.
149 Recital 67, ibid.
150 Article 17, ibid.
151 Article 17(2)(b), ibid.
152 The compatibility between this aim and the purpose limitation principle applicable to personal data is a topic for another day.
153 Article 19(1); Recital 65 of the draft Data Act (n 35).
154 Article 21(1), ibid.
155 Recital 68, ibid.
156 Article 17(3) and Recital 62, ibid.

### 3.3 The Data Governance Act

The Data Governance Act ('DGA') was adopted in 2022 and will become binding in September 2023.[157] It sets out different measures designed to incentivise a greater accessibility of personal and non-personal data in the EU. Indeed, it has been an oft-repeated criticism that the sharing of (personal) data among different actors in the EU is hampered by a lack of legal certainty, due, on the one hand, to the absence of sui generis norms targeted specifically at data sharing, and more general uncertainties related to the applicability and interpretation of the GDPR on the other. At present, the sharing of data between different actors is widely considered insufficient as it is deemed to leave some of the internal market's innovative potential unlocked.

The DGA attempts to solve this uncertainty by creating three novel legal regimes for different forms of voluntary data sharing. First, it creates new rules regarding the conditions for the re-use, in the EU, of certain categories of data held by public sector bodies; second, it gives rise to a notification and supervisory framework for the provision of data intermediation services; and finally, it establishes a framework for voluntary registration of so-called data altruism services, essentially a mechanism that enables data subjects to donate their data.[158] This paper focuses specifically on this option. Whereas environmental data and environmentally relevant data can form part of public sector data or be made available through data intermediaries, data altruism seems most immediately relevant to the question of whether the new regulation will positively impact the access to and sharing of such data. Even though the DGA is not explicitly about data-driven sustainability solutions, ecological sustainability could be one of the objectives for which individuals choose to donate their data.

#### *3.3.1 Data altruism: a euphonious new method of voluntary data sharing*

The DGA defines data altruism as 'the voluntary sharing of data on the basis of the consent of data subjects to process personal data pertaining to them, or permissions of data holders to allow the use of their non-personal data without seeking or receiving a reward that goes beyond compensation related to the costs that they incur where they made their data available for objectives of general interest'.[159]

To pinpoint the potential of data altruism for ecological sustainability, a closer look at this notion of the 'objective of general interest' is pivotal. Data altruism organisations (DAOs) must set out clearly what these objectives are and are prohibited from using the data for other objectives.[160] Rather than providing a general test of a general interest objective, the DGA provides a seemingly non-exhaustive list of such general interest grounds.[161] These are: healthcare, combatting climate change, improving mobility, facilitating the development, production and dissemination of official statistics, improving the provision of public services, public policy-making, and scientific research.[162] This legislative list appears to create different levels of general interest criteria. First, scientific research, official statistics and public policy are presumed to always occur in the public interest notwithstanding which thematic issue they relate to (a debatable claim as one can imagine, and find, examples of scientific research that can hardly be seen in that light). Second, the regulation selectively enumerates various specific thematic areas considered to be in the public interest notwithstanding whether they are related to the broad categories of scientific

157 The DGA's provisions on data intermediaries will become binding only on 24 September 2025.
158 Article 1(1) of the DGA (n 34). The DGA furthermore sets up the EU Data Innovation Board.
159 Article 2(16), ibid.
160 Article 21(2), ibid.
161 Indeed, Recital 45, ibid, reads 'Such objectives would include', the French version 'Ces objectifs auraient trait notamment' and the German version states that 'Zu diesen Zielen gehören'. We interpret these formulations to indicate that the public interest grounds listed are not intended to be exhaustive.
162 ibid.

research, official statistics and public policy, namely healthcare (in general), combatting climate change and improving mobility. This mixture of public interest grounds is likely to cause some difficulties in the practical implementation of the DGA. Regarding environmental sustainability, it appears uncontroversial that related statistics, public policy measures and scientific research on any aspect thereof would be covered by the data altruism mechanism. Similarly, measures aimed at combatting climate change would be, too, and irrespective of whether they take the form of scientific research, official statistics and public policy, although the DGA's reference to 'combatting' climate change leaves some room for interpretation regarding whether this only includes climate change mitigation or also adaptation strategies. But what about the use of data for other objectives outside the context of scientific research, official statistics and public policy, such as the preservation of biodiversity? Whereas the enumeration of general interest objectives was not intended to be exhaustive, it is unclear which objectives courts would consider to be in the public interest and the DGA indeed does not set out criteria to evaluate this. These legislative formulations will likely result in practical uncertainty and judicial disputes, which in turn risk having chilling effects on those considering data altruism mechanisms to solve some of today's pressing ecological problems.

If data sharing for a particular cause falls within the scope of the data altruism regime, the DGA's related regime applies. The first thing to note in this respect is that the DGA merely foresees that Member States may create organisational or technical arrangements (or both) that facilitate data altruism and related establish national policies.[163] This is designed to make it easier for data subjects to make personal data related to them held by public sector bodies available for altruistic purposes and set out the required information for data subjects.[164] Importantly, the DGA does not create a harmonised supranational framework on data altruism. Member States that do adopt their own schemes shall notify the Commission of their initiatives[165] and keep a public national register of recognised DAOs.[166] To qualify for registration, entities have to (1) carry out data altruism activities; (2) have the form of a legal person established pursuant to national law to meet objectives of general interest (where applicable); (3) operate on a not-for-profit basis and be legally independent from for-profit entities; (4) carry out data altruism activities through a structure that is functionally separate from other activities; and (5) comply with the rulebook for DAOs that is to be established by the Commission under Article 22(1) DGA.[167]

The Commission will in turn keep a public EU register of all recognised DAOs.[168] DAOs registered in national registers of such organisations may use the label 'data altruism organisation recognised in the Union' as well as a common logo.[169] Recognised DAOs need to abide by transparency requirements including the keeping of full and accurate records of who has accessed the data, when it was accessed, and for which purpose.[170] They must moreover implement requirements to safeguard the rights and interests of data subjects and data holders. This includes the provision of information about the objectives of general interest that are pursued as well as, in the case of personal data, of the purpose for which data is processed.[171] Additional rules apply where the data is processed in a third country.[172] Whereas the data altruism regime is certainly well-intentioned, there is reason to doubt that it will realise its intended effects.

163 Article 16, ibid.
164 ibid.
165 ibid.
166 Article 17(1), ibid.
167 Article 18, ibid. The DGA foresees that the Commission shall, through delegated acts, establish a rulebook that specifies, inter alia, what appropriate information requirements are, appropriate technical and security requirements, communication roadmaps as well as recommendations on interoperability standards.
168 Article 17 (2), ibid.
169 Ibid.
170 Article 20, ibid.
171 Article 21(1), ibid.
172 ibid.

### *3.3.2 The limited potential of data altruism*

Data altruism denotes a form of data sharing on voluntary grounds whereby data subjects and data holders make their data available for the common good. A closer inspection of the legal data altruism regime as well as its relation to the broader European data law puzzle, in particular data protection law, however, reveals that the practical effects of this new concept will likely remain limited.

First, it was already highlighted above that the European legislator has adopted a definition of general interest objectives fraught with uncertainty. Whereas environmental sustainability is caught in the context of public policy, official statistics and scientific research, only climate change is listed as a general thematic area always considered to be in the public interest. This will lead to disputes as to whether, for instance, private sector initiatives which promote innovations in the area of resource protection or conservation, such as efforts to counteract soil depletion or nitrate pollution of water, or to minimise the use of raw materials for energy consumption or production, cannot rely on data altruism as an access model to the relevant data.

Second, data altruism as conceptualised by the DGA was plainly possible prior to this recent legislative intervention. Whereas the DGA can be seen as an attempt of introducing legal certainty (questionable, as seen below) for DAOs and in this way incentivise their creation and reliance upon them, it did not remove any existing legal limitations to their operation. Indeed, there are existing DAOs today, albeit their number and reach remain limited. Examples include the German Robert Koch Institute's 'Data Donation App', which allows data subjects to donate data from their wearables to support the detection and understanding of COVID-19,[173] or the Decode project, which enabled citizens in Barcelona and Amsterdam to collect data on noise, air pollution, temperature and humidity through sensors and make this available to the general public.[174] This leads to a presumption that the limited adoption of the data altruism model is likely not (only) due to legal but also other reasons such as lacking incentives to create DAOs, and the risks and costs associated therewith as well as concerns that competitors will exploit the data to their own ends. Indeed, rather than reducing compliance costs, the DGA's sui generis regime on DAOs will increase these costs as it imposes additional reporting requirements on operators. If the lack of data altruism is due to these factors, the DGA's label will do little to incentivise a proliferation thereof.

Third, the DGA does not provide any clear rules on how the donation to a DAO ought to occur nor how specifically the data can be used afterwards. The related uncertainty means that potential creators of DAOs as well as potential providers and users of the related data will think twice about whether they want to incur related risks and costs. The regulation indeed does not address the lacking legal certainty and compliance costs resulting from the fact that where personal data is being shared for public interest grounds, the GDPR applies.

The resulting reputational and financial risks will make prospective providers of DAOs think twice about whether creating such an entity is a worthwhile venture. The lacking coherence between the new elements of EU data law (which generally seek to incentivize the sharing of personal and non-personal data) as well as data protection law (which constitutes a qualified prohibition on the processing of personal data) is a general issue that will keep EU data law experts busy for decades to come. Indeed, the mantra common to all new and proposed Acts, namely that they are without prejudice to the GDPR, cannot distract from the hard truth that these regulations (1) do not solve existing uncertainties in data protection law, and (2) even

173 Robert Koch Institut, 'Corona-Datenspende-App 2.0', available at <https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Corona-Datenspende-allgemein.html> accessed 19 December 2022.

174 Winfried Veil, 'Data Altruism: How the EU Is Screwing up a Good Idea', available at: <https://algorithmwatch.org/en/eu-and-data-donations/> accessed 19 December 2022.

create additional uncertainties related to the mutual interplay between these norms. The latter point will likely be exacerbated by the fact that different national supervisory authorities with different focus and incentives will be created by the new regulations.

It assumes a particularly intriguing dimension in relation to data altruism as, unlike purely commercial forms of data sharing, DAOs are based on a public interest objective. DAO operators will indeed face different legal questions regarding the interpretation of data protection law in the context of data altruism. For instance, they will have to determine the compatibility of their operations with the EU's Charter of Fundamental Rights and GDPR's purpose limitation requirement, which requires that the purpose of processing be set out in an explicit, specific, and legitimate manner.[175] Yet, it will be challenging to determine how the re-use of data for general interest objectives can be squared with the compatible use requirement of the purpose limitation principle. Here, a provision along the lines of Recital 33 GDPR, which recognises that a precise definition of the purpose in scientific research is often unrealistic, would have been helpful—and have arguably had a more tangible permissible effect on the processing of data for general interest objectives compared to the DGA's regime. Many questions of similar complexity loom large for DAOs. While the DGA assumes that data subject consent can legitimize the processing of personal data for altruistic purposes,[176] the GDPR's requirements regarding valid consent, that it be freely given, specific, informed and unambiguous,[177] as well as withdrawable at any point,[178] will be difficult to meet in practice. While some literature has endorsed a notion of 'broad consent', the EDPB is sceptical of such an opening.

Given data protection's status as a fundamental right and the fact that risks arise for data subjects notwithstanding the normative reasons why their data is processed, data protection law applies notwithstanding the specific context of processing.[179] Yet, one must unfortunately acknowledge that current forms of environmental degradation are a threat to at least some human life on the planet. This presses the inevitable question of how to value data protection vis-à-vis the preservation of human habitat and life. Adopting this perspective, one has to indeed wonder whether a lightening of the data protection compliance regime for DAOs (pursuing objectives of environmental sustainability) would have been a much more efficient means of achieving the DGA's goal of increased data processing for general interest objectives as opposed to the creation of a formalistic regime that increases compliance costs and legal uncertainty even further. There indeed seems to be no evidence that the data altruism logo foreseen by the DGA will have any incentivizing effect on data altruism. Alternative solutions could have been more efficient in achieving this goal such as, eg, the addition of an 'altruism exemption' in Article 2 GDPR, the duplication of the GDPR's regime on scientific research for a defined list of common interest objectives, or a revision of the purpose limitation principle.[180] It goes without saying that these are hard questions to ask, normatively and societally, yet it also appears that they will inevitably arise mid-term.

## 4. OUTLOOK

The swelling importance of data, including for purposes of environmental sustainability, can hardly be denied. This article has demonstrated the importance of processing *data about the environment* and *data related to the environment* for purposes of environmental sustainability.

175 See also Article 21(1)(a) DGA (n 34).
176 Arts 21 and 22, ibid.
177 Recital 32 GDPR (n 98).
178 Art 7(3), ibid.
179 With some isolated and narrowly-defined exceptions such as the household exemption.
180 Needless to say, this would always require a revision of the GDPR, which seems politically unlikely at this moment in time.

There is little doubt that environmental sustainability will become an increasingly pressing legal issue over the coming years and decades. The European legislator is aware of this, which is apparent both by the existing policies and norms on data law, as well as by the agenda set through the European Green Deal. Our study highlights that although there appears to be an overlap between the European Green Deal and the Digital Agenda, especially in discourse, consideration of their link largely stops when it comes to substantive norms. Indeed, the new data access and sharing regimes developed under the DGA and the draft Data Act do not make special provisions for data that could be used for environmental purposes. Furthermore, we have highlighted that the new instruments suffer from numerous limitations that put into question not just their overall success but also their ability to improve the availability of data in view of promoting environmental sustainability. With time, the EU legislator may hence decide to amend existing policies and create a more impactful legal regime that is able to facilitate the access to data for the environment. To do so, it could, for instance, implement compulsory forms of B2B data sharing, as was discussed by the Impact Assessment for the Data Act but ultimately rejected in the regulatory process. More generally, the availability of environmentally relevant data could also be regulated by a sui generis, sectorial regime, which both the draft Data Act as well as the DGA seem to leave open as an option.

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