

Part 4

**THE DIGITAL TRANSITION**



## Chapter 1

# DATA-DRIVEN ECOSYSTEMS: COMPETITION LAW AS A WAY TO LINK SUSTAINABILITY AND DIGITALISATION

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*ABSTRACT: The European Green Deal and the Digital Decade Policy Programme 2030 identify digitalisation as the key enabler for steering the EU's economy and society towards sustainability. This involves increased use of data to address economic, social, climate, and environmental challenges. Concurrently, digitalisation and data-related practices must prioritise sustainability within themselves. This chapter explores how the liaison between sustainability and digitalisation within data-driven ecosystems affects competition law. It advocates for a shift from monocentric to polycentric competition law, involving various actors in the objective of climate neutrality. The Commission has expanded pro-competitive disciplines to include environmental and social goals, enhancing sustainability and privacy protections. The 2024 Revised Relevant Market Definition now includes these factors as part of the quality of goods and services in competition assessments. This emphasis on the quality parameter appears to be related to the reconceptualisation of sustainable development evolving from data-driven ecosystems together with the paradigm of ecosystem sustainability. In addition to the Relevant Market Definition, updated analytical tools, such as safe harbours and guidelines, address challenges linked to sustainability and digitalisation within competition law. This operationalisation underscores the necessity for evolving economic premises, proxies, and presumptions to reflect sustainability and digital advancements in data-driven ecosystems.*

*KEYWORDS: Data-driven Ecosystems – Sustainability – Digitalisation – Competition – Analytical Shortcuts.*

*SUMMARY: 1. The Liaison Between Sustainability and Digitalisation in Data-driven Ecosystems; 2. Facing the Challenges of Sustainable Data-driven Ecosystems: A Shift Towards Polycentric Competition Law; 2.1. Revised Relevant Market Definition; 2.2. The Concepts of Sustainability Evolving from Data-driven Ecosystems; 3. The Direction of Digital Analytical Shortcuts; 4. Final Considerations.*

## 1. The Liaison Between Sustainability and Digitalisation in Data-driven Ecosystems

In this chapter, the concept of *data-driven ecosystems* refers to data resources that enable a network of actors (both supply- and demand-side) to rely on each other's activities in order to create value from online and/or offline interactions.<sup>1</sup> They are generally characterised by the co-evolution of the collaborating actors under an aligned vision, modularity, interdependencies and non-generic technological complementarities that bind together data-driven ecosystem participants.<sup>2</sup> However, similar to the numerous conceptualisations of *ecosystems* in management literature, data-driven ecosystems are a governance model that diverges from both full integration and the use of arm's-length contracts.<sup>3</sup> For example, personal and non-personal data can be used to carefully track consumer preferences and product

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<sup>1</sup> Compare with the ecosystem definition provided by Jacobides M., Cennamo C., and Gawer A., "Towards a theory of ecosystems", in *Strategic Management Journal*, 2018, no. 39, 2256.

<sup>2</sup> *Modularity* refers to the ability to divide different stages of production and consumption chains. *Interdependencies* identify structural relationships between actors in terms of the connection of their offers for the value to be created. *Non-generic complementarities* require specific arrangements and investments to make ecosystem participants' activities complementary to the others. *Ibidem*; Jacobides M., Cennamo C., and Gawer A., "Distinguishing between Platforms and Ecosystems: Complementarities, Value Creation, and Coordination Mechanisms", *Working Paper, London Business School*, 2020; Moore J., "Business ecosystems and the view from the firm", in *The Antitrust Bulletin*, 2006, no. 51, 34.

<sup>3</sup> *Ibidem*, 13; Kapoor R., "Ecosystems: broadening the locus of value creation", in *Journal of Organization Design*, 2018, no. 7; Adner R., "Ecosystem as Structure: An Actionable Construct for Strategy", in *Journal of Management*, 2016, no. 43, 39.

supply chains, providing reliable information to make sustainable and informed consumer choices, without unified governance. Thus, as long as the capabilities to integrate technologies and exploit data exist, participants can leverage their data-driven ecosystems and drive significant technological, economic, social and environmental changes beyond any single ecosystem.<sup>4</sup> Accordingly, data-driven ecosystems must be considered a key enabler for addressing the European Union's green and digital transformation.

With the *twin* transitions, green and digital, the European Union has defined two priority initiatives, focusing on sustainability and digitalisation respectively, each following its own agenda while also impacting upon the other.<sup>5</sup> The green transition seeks for the EU to achieve climate neutrality by 2050<sup>6</sup> setting out the pathway for sustainability in the EU's society and economy. The digital transition, instead, lays down a set of regulatory initiatives to harness digital technologies for the benefit of citizens, businesses and public administrations,<sup>7</sup> and to achieve the EU's digital targets.<sup>8</sup>

By outlining the *finalité* of the transitions,<sup>9</sup> the European Green Deal (EGD) and the Digital Decade Policy Programme 2030 point to the Union's collective ability to put its competitive economy and society on a more sustainable path through digital technologies.<sup>10</sup> To track the progress towards sustainability through digitalisation, the Commission uses the indicator on Information Communication Technology (ICT) for environmental sustainability, part of its Digital Economy and Society Index, to measure the share of enterprises having medium/high intensity of green action through ICT.<sup>11</sup> The level of intensity is based on the number of environmental actions (*e.g.*, the development of energy-saving, climate-neutral, high-efficiency and interconnected services as well as the use of fewer materials, equipment or consumables) that have been facilitated by the adoption of ICTs.

Highlighting the importance of the interplay between the twin transitions, the digitalisation of the EU's economy and society in itself is a significant factor in the green transition while also acting as a *key enabler* for the changes necessary in pushing towards the sustainability goals.<sup>12</sup> More precisely, the free flow of data, as well as the extended use of ICT, such as data management systems, artificial intelligence,<sup>13</sup> internet

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<sup>4</sup> Iansiti M. and Levien R., *The Keystone Advantage: What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation, and Sustainability*, Harvard Business Review Press, 2004, 211-224.

<sup>5</sup> Ursula von der Leyen, "A Union that strives for more: My agenda for Europe. Political guidelines for the next European Commission 2019–2024", 2019, available at [https://commission.europa.eu/system/files/2020-04/political-guidelines-next-commission\\_en\\_0.pdf](https://commission.europa.eu/system/files/2020-04/political-guidelines-next-commission_en_0.pdf).

<sup>6</sup> Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) 401/2009 and (EU) 2018/1999 [2021], OJ L 243/1 (European Climate Law), Article 1.

<sup>7</sup> To follow the digital transition initiatives see the webpage dedicated to "A Europe fit for the digital age", available at [https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age\\_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age_en).

<sup>8</sup> Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade Policy Programme 2030 [2022] L 323/4, (Digital Decade Policy Programme 2030), Article 4.

<sup>9</sup> Chiti E., "Managing the ecological transition of the EU: the European Green Deal as a regulatory process", in *CMLRev.*, 2022, no. 59, 40.

<sup>10</sup> Commission, "Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions - The European Green Deal", COM(2020) 640 final, (The European Green Deal), 4; Digital Decade Policy Programme 2030 (n 8), Article 3(c)(e)(h); Commission, "Implementation of the Digital Decade objectives and the Digital Rights and Principles", SWD(2023) 570 final, 49-58.

<sup>11</sup> Commission, Digital Economy and Society Index (DESI 2022), 47-48.

<sup>12</sup> The European Green Deal (n 10), 4, 7 and 9; Digital Decade Policy Programme 2030 (n 8), Recital 6; Commission, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Shaping Europe's digital future", COM(2020) 67 final, (Shaping Europe's digital future), 11.

<sup>13</sup> Regulation (EU) 2024/... of the European Parliament and of the Council of ... laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act), Article 3(1), available at <https://www.consilium.europa.eu/en/press/press-releases/2024/05/21/artificial-intelligence-ai-act-council-gives-final-green-light-to-the-first-worldwide-rules-on-ai/>.

of things<sup>14</sup> and others, can further the impact of policies dealing with climate change and environmental issues, including sustainable lifecycles.<sup>15</sup> At the same time, in pursuing both the digital and green transitions, digitalisation *must put sustainability at its heart*.<sup>16</sup> The extended use of digital technologies, especially data management systems, risks an increase in greenhouse gas emissions and energy use.<sup>17</sup> Therefore, digital and data-related practices should promote a circular and climate-neutral economy while concurrently ensuring inherent sustainability within themselves. As a result, this liaison between sustainability and digitalisation is functionalised to bring about the achievement of the climate neutrality target.

To pursue sustainable and digital transformation, the EGD and the Digital Decade Policy Programme 2030 require the contribution of all EU policies, including competition policy.<sup>18</sup> Consequently, competition policy and the associated rules are undergoing an unprecedented revision process to complement<sup>19</sup> the Union's transition initiatives through their implementation and enforcement.<sup>20</sup> In practice the Commission has broadened the contents of pro-competitive disciplines to increase the weight of environmental and social goals, seeking to boost sustainability and strengthen privacy protection. For instance, the Commission reviewed the vertical and horizontal agreements guidelines to stress the necessity of pro-competitive agreements, under which any harm to competition is outweighed by counterbalancing sustainability and/or digital benefits. Even on the State Aid front, the Commission reviewed the State Aid Guidelines and Block Exemption Regulations to channel private and public investments towards sustainable and digital infrastructures.<sup>21</sup>

The purpose of this chapter is to discuss the aforementioned liaison within data-driven ecosystems, and its effects on the direction of competition law in data-related practices. The methodology of the research is doctrinal in analysing the EU Data Strategy, the new data regulatory framework, and the complementary enforcement of competition law in data-related challenges. The chapter will investigate the effects of the liaison in reorientating competition law (§ 2). The Commission recently published the

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<sup>14</sup> European Parliament and Council Regulation (EU) 2023/2854 of 13 December 2023 on harmonised rules on fair access to and use of data and amending Regulation (EU) 2017/2394 and Directive (EU) 2020/1828 (2023) OJ L 2023/2854 (Data Act), Recital 14.

<sup>15</sup> The European Green Deal (n 10), 9; Digital Decade Policy Programme 2030 (n 8), Recital 6.

<sup>16</sup> *Ibidem*; Shaping Europe's digital future (n 12), 12.

<sup>17</sup> The ICT sector is responsible for 5 to 9% of the world's total electricity consumption and more than 2% of global emissions. In 2018, data centres accounted for 2,7% of the electricity demand in the 28 Member States. Despite the high demand for data centre services, data centres' emissions and energy use (excluding crypto mining) have grown only moderately. This result can be attributed to the replacement of coal and other fossil fuels with less emissive energy sources. In addition to this, it is partly due to efficient and innovative solutions in IT hardware and cooling systems, as well as a shift towards more efficient cloud and hyperscale data centres. Hyperscale data centres are often associated with large companies that require vast data processing and storage requirements, such as Alphabet, Amazon, Meta, Apple and Microsoft. For a thorough analysis of the ICT's footprint and energy demand, along with the associated progressing solutions, see Commission, "Implementation of the Digital Decade objectives and the Digital Rights and Principles", SWD(2023) 570 final, 50-55; Rozite V., Bertoli E., and Reidenbach B., "Data Centres and Data Transmission Networks", in IEA, 2023, available at <https://www.iea.org/reports/data-centres-and-data-transmission-networks>; Rifkin J., *Green New Deal – Il crollo della civiltà dei combustibili fossili entro il 2028 e l'audace piano economico per salvare la Terra*, Mondadori, 2021, 57-67; Jones N., "The Information Factories", in *Nature*, 2018, 163, available at <https://www.nature.com/articles/d41586-018-06610-y.pdf?pdf=button%20sticky>.

<sup>18</sup> The European Green Deal (n 10), 3; Digital Decade Policy Programme 2030 (n 8), Recital 3.

<sup>19</sup> The boundaries between competition law and regulation have long been debated. A shared conclusion in the European Union is that competition rules have a complementary role to *ex ante* regulations under certain conditions. See Case C-252/21 *Meta Platforms Inc and Others v Bundeskartellamt* [2023] ECLI:EU:C:2023:537. For the evolution of the complementary role of competition law, see Drexler J. and Di Porto F., *Competition Law as Regulation*, Edward Elgar, 2015, 153-162.

<sup>20</sup> Commission, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - A competition policy fit for new challenges", COM(2021) 713 final, (A competition policy fit for new challenges).

<sup>21</sup> For insight into the current revision process of competition policy and rules see Majcher K. and Robertson V., "The Twin Transition to a Green and Digital Economy: The Role for EU Competition Law", *Graz Law Working Paper No 05-2022*, 2022; Fazio E., "Adapting Competition Law to the Digital Transition. Two Challenges", in *European Papers*, 2022, no. 7, 981.

Revised Notice on the Definition of Relevant Market, providing a clear example of boosting environmental and social goals in competition assessments. In the author's view, this environmental and social consideration in competition law is readily apparent nowadays, although it still raises doubts on the conceptualisation of *sustainability* and needs to be operationalised. To fulfill the operationalisation need, the chapter will then examine analytical shortcuts that can be explored by companies and competition authorities (§ 3). The last section will present some final considerations (§ 4).

## 2. Facing the Challenges of Sustainable Data-driven Ecosystems: A Shift Towards Polycentric Competition Law

The European Data Strategy and associated regulations consider data an essential resource not only for economic development but also for tackling social, climate and environmental challenges.<sup>22</sup> It is the lifeblood for training artificial intelligence systems and other ICT, as well as the basis for personalised and monitored productions.<sup>23</sup> Increasing data sharing can further the ability of data recipients to innovate, reduce production costs, enter new markets, and personalise goods and services. In addition, it can advance the EU towards its climate neutrality target by encouraging the reuse of data, improving the quality of goods and services, reducing CO<sub>2</sub> emissions, and enhancing supply chain controls, among other things.<sup>24</sup>

Despite the sustainability-related and digital benefits of access to data, only a limited number of companies *share* or *pool* their data with others. This phenomenon is referred to as the *data-sharing paradox*: on the one hand, data is increasing in value for the EU's economy and society; on the other hand, companies are reluctant to share the collected data.<sup>25</sup> The data-sharing paradox affects business-to-business (B2B), government-to-business (G2B) and business-to-government (B2G) transactions.<sup>26</sup> Following the EU data regulatory framework, data should be available to any private and public entity to foster innovation and competition within the EU Single Market, and realise the environmental and social benefits of data-driven ecosystems.<sup>27</sup> The European approach to creating a single European data space, including several common EU data spaces,<sup>28</sup> shifted from an individualistic human-centred perspective to a broader societal one.

To realise the potential of the extended use of data without distorting competition,<sup>29</sup> competition purposes must consider the broader perspectives of data regulations in balancing access and restrictions to data. Competition is a dynamic process that is not defined in legislative sources. The lack of a definition

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<sup>22</sup> 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, (European Data Strategy), 2-3; European Parliament and Council Regulation (EU) 2023/2854 of 13 December 2023 on harmonised rules on fair access to and use of data and amending Regulation (EU) 2017/2394 and Directive (EU) 2020/1828 (2023) OJ L 2023/2854 (Data Act), Recital 1; 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 [2022] OJ L 152/1, (Data Governance Act), Recital 2; Regulation (EU) 2022/1925 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 [2022] OJ L 265/1, (Digital Markets Act), Recital 3.

<sup>23</sup> European Data Strategy (n 22), 2-3; Shaping Europe's digital future (n 12), 11; DESI 2022 (n 11), 51; Ezrachi A. and Stucke M., "Digitalisation and its impact on innovation", *R&I Paper Series Working Paper 2020/07*, 2020, 5; Yu P., "Data Producer's Right and the Protection of Machine-Generated Data", in *TuLLRev.*, 2019, no. 93, 860; Finck M., "Digital Regulation: Designing a Supranational Legal Framework for the Platform Economy", *LSE Law, Society and Economy Working Papers 15/2017*, 2017, 2.

<sup>24</sup> See Botta M., "Shall we share? The principle of FRAND in B2B data sharing", *RSC 2023/30 Working Paper*, 2023, 18-19; JRC Technical Reports, "Competitiveness and Sustainable Development Goals", 2016, 13.

<sup>25</sup> Botta (n 24), 8.

<sup>26</sup> *Ibidem*.

<sup>27</sup> European Data Strategy (n 22), 1; Drexler J., "Designing Competitive Markets for Industrial Data Between Propertisation and Access", in *JIPITEC*, 2017, 262.

<sup>28</sup> Commission, "Staff Working Document on Common European Data Spaces", SWD(2022) 45 final.

<sup>29</sup> Consolidated version of the Treaty on European Union - Protocol (No 27) on the internal market and competition [2008], OJ C 115.

is the result of a historical legacy which leads us to consider self-evident the idea of competition as a natural state of the market.<sup>30</sup> Many scholars have long debated the controversial scope of competition law by adopting textual, teleological and historical methods.<sup>31</sup> To identify the goals of competition law, and verify whether sustainability and privacy protection might be considered, this chapter follows the recent empirical analysis of Konstantinos Stylianou and Marios Iacovides.<sup>32</sup>

Their quantitative analysis suggests that the academic debate is characterised by a great variety of opinions and wide disagreements on the objectives of competition, especially with regard to sustainability and privacy protection.<sup>33</sup> This reflects EU competition law's pursuit of multiple goals with fluctuating significance. Indeed, coherent with EU institutional practice, competition law does not pursue only one main goal at the expense of others but rather includes a variety of objectives without rejecting the relevance of others.<sup>34</sup>

The authors grouped the traditional competition law goals into seven broad families that feed into their methodology: efficiency, welfare, freedom to compete, market structure, fairness, European integration, and competitive process. All goals are considered in competition practice, even though the related objectives of protecting a market structure based on an effective competitive process are mentioned more frequently.<sup>35</sup> In addition to the traditional objectives, the contemporary goals upheld by the new competition policy,<sup>36</sup> *id est* sustainability and privacy protection, are already part of the academic debate and institutional practice. Ultimately, these contemporary aims are becoming part of EU competition law in their own right.<sup>37</sup>

Seeking to meet multiple objectives, scholars have used a variety of terms to identify a multifaceted and versatile manner to promote competition, such as *experimental* competition law,<sup>38</sup> *responsive* competition law,<sup>39</sup> *participatory* competition law,<sup>40</sup> and *polycentric* competition law.<sup>41</sup> Notably, the idea of polycentric competition law is emerging in the academic and institutional debate to face the challenges of sustainable data-driven ecosystems.<sup>42</sup> So far, competition law has been developed around a monocentric

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<sup>30</sup> Libertini M., "Concorrenza", in *Enciclopedia del diritto, Annali*, III, Milano, 2010.

<sup>31</sup> The scientific discussion on the goals of competition law is vast and there is no way to refer to it exhaustively. See, however, Holmes S., "Climate change, sustainability, and competition law", in *Journal of Antitrust Enforcement*, 2020, no. 8, 354; Dunne N., "Public Interest and EU Competition Law", in *The Antitrust Bulletin*, 2020, no. 65, 256; Ezrachi A., "EU Competition Law Goals and The Digital Economy", *Oxford Legal Studies Research Paper No 17/2018*, 2018, available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3191766](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3191766); Khan L., "Amazon's Antitrust Paradox", in *YaleLJ*, 2017, no. 126, 710; Amato G., *Antitrust and the Bounds of Power: The Dilemma of Liberal Democracy in the History of the Market*, Oxford Hart Publishing, 1997, 95–129; Bork R., *The Antitrust Paradox: A Policy at War with Itself*, Basic Books, 1978.

<sup>32</sup> Stylianou K., Iacovides M., "The goals of EU competition law: a comprehensive empirical investigation", in *Legal Studies*, 2022, no. 42, 620.

<sup>33</sup> *Ibidem*, 624-631.

<sup>34</sup> *Ibidem*, 636-639.

<sup>35</sup> *Ibidem*, 639 and 641. The related objectives of competition process and market structure appear more frequently in the Court of Justice and General Court' decisions ("hard law" sources), as well as Advocate Generals' opinions.

<sup>36</sup> A competition policy fit for new challenges (n 20).

<sup>37</sup> Stylianou, Iacovides (n 32), 647.

<sup>38</sup> Svetiev Y., *Experimentalist Competition Law and the Regulation of Markets*, Hart Publishing, 2020; Fazio E., "Experimental Competition Enforcement: A Complementary Data Sharing Toolkit", forthcoming in *Yearbook of Antitrust and Regulatory Studies*.

<sup>39</sup> Makris S., "EU Competition Law as Responsive Law", in *Cambridge Yearbook of European Legal Studies*, no. 23, 2021; Ioannidou M., "Responsive Remodelling of Competition Law Enforcement", in *OJLS*, 2020, no. 40, 846.

<sup>40</sup> Kathuria V., "The Rise of Participative Regulation in Digital Markets", in *Journal of European Competition Law & Practice*, 2022, no. 13, 537. The term *participative competition law* is attributed to the Nobel Prize-winning economist Jean Tirole, available at: <http://qz.com/1310266/nobelwinning-economistjean-tirole-on-to-regulate-tech-monopolies>.

<sup>41</sup> Lianos I., "Polycentric Competition Law", in *CLP*, no. 71, 2018.

<sup>42</sup> The term *polycentric competition law* refers to a system of many decision-making centres having autonomous and limited prerogatives and operating under an overarching set of rules. It has three main characteristics: the multiplicity of decision centres, the overarching set of rules defining the polycentric system, and the spontaneous order arising from dynamic competition between the several decision centres' ideas, methods, and operations. See Lianos I., "Value extraction and institutions in digital capitalism: Towards a law and political economy synthesis for competition law", in *European Law*

problem, namely the price and output costs of market power, and relied on a de-socialised conception of individuals.<sup>43</sup> Arguably, this approach is not adequate for data-driven ecosystems, where actors rely on each other's activities. Indeed, to fully take into account the liaison between sustainability and digitalisation, individuals' interactions, as well as the broader environmental and social effects of their conduct, must be considered in competition assessments. Thus, polycentric theory suggests considering many centres of decision-making that are formally independent of each other yet take each other into account in competitive relationships.<sup>44</sup> In other terms, competition in sustainable data-driven ecosystems should be seen as a polycentric system including a network of diverse actors that adjust their behaviour to the decisions made by others and share the climate neutrality target recalled by the liaison.

Contrary to the monocentric perspective, a polycentric problem/solution does not solely affect the relationship between the parties of the specific transaction but also expands beyond the strict confines of bilateral exchanges.<sup>45</sup> One example from within data-driven ecosystems, occurs when companies seek to exchange data. Rather than providing access to data in exchange for monetary compensation, they usually establish *data platforms*.<sup>46</sup> Data platform participants are remunerated by having access to a common and larger data pool. For instance, the data platform Skywise was set up by Airbus and airlines that purchased Airbus airplanes to freely provide the company with real-time diagnostic data about their airplanes.<sup>47</sup> The data pool allows Airbus to improve the quality and maintenance of its airplanes in the long term; simultaneously, it accelerates decarbonisation by offering data insights on CO<sub>2</sub> emissions. Thus, the data-sharing practice serves not only the interests of the parties but has broader environmental and social effects.

Data platforms are a clear example of the type of vertical or horizontal cooperation agreements which might be subject to competition law scrutiny under Article 101 TFEU.<sup>48</sup> The monocentric perspective on the one hand would only consider the fact that by restricting competition in a specific relevant market these practices can increase prices and output costs, concentrating market power. The polycentric perspective, instead, also takes factors, such as the liaison between sustainability and digitalisation into account, thus also considering the possible benefits to the sustainability of goods and services in the same or different markets.

## 2.1. Revised Relevant Market Definition

The definition of the relevant market is an analytical tool used to identify and define the boundaries of competition between undertakings. It is strictly related to the market power issue at the heart of

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*Open*, 2022, no. 1, 887-888; Libertini M., "Digital markets and competition policy. Some remarks on the suitability of the antitrust toolkit", in *Orizzonti del Diritto Commerciale*, 2021, 351-352; Lianos (n 41); Ezrachi (n 31). For the evolutionary theory of polycentricity see Polanyi M., *The Logic of Liberty: Reflections and Rejoinders*, University of Chicago Press, 1951; Fuller L., "The Forms and Limits of Adjudication", 1978, *HarvLRev*, no. 92, 353; Ostrom V., "Polycentricity" in McGinnis M. (ed.), *Polycentric governance and development: readings from the Workshop in Political Theory and Policy Analysis*, University of Michigan Press, 1999; Ostrom E., *Governing the Commons: The Evolution of Institutions for Collective Action*, CUP, 1990; Aligiga P. and Tarko V., "Polycentricity: From Polanyi to Ostrom, and Beyond", *Governance*, 2012, no. 25, 237.

<sup>43</sup> Lianos (n 41), 9-10.

<sup>44</sup> Lianos (n 41), 7-8.

<sup>45</sup> Lianos (n 41), 6.

<sup>46</sup> Access to data can take place in accordance with a multitude of data-sharing models. However, the most common categories of data-sharing are currently data platforms, data marketplaces, technical enablers, data philanthropy, data prizes, and data partnerships. Botta (n 24); Commission, 'Staff Working Document on Guidance on sharing private sector data in the European data economy', SWD(2018) 125 final, Sections 3 and 4.

<sup>47</sup> See <https://aircraft.airbus.com/en/services/enhance/skywise>.

<sup>48</sup> The Commission has recently published new Guidelines which set out principles for the assessment of vertical and horizontal cooperation agreements, decisions and concerted practices between undertakings ("agreements") under Art. 101 TFEU. Commission, "Guidelines on vertical restraints", C(2022) 248/01 [2022] OJ C 248 (Guidelines on vertical restraints); Commission, "Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal cooperation agreements", (2023) OJ C 259 (Guidelines on horizontal cooperation agreements).



competition policy and law,<sup>49</sup> with market power defined as the measure of the ability of an undertaking to profitably raise prices, limit output, suppress innovation, reduce the variety or quality of goods and services, and restrict consumer choice in relevant markets.<sup>50</sup>

EU competition law has a two-stage procedure to determine whether one or multiple companies have or would have market power. Firstly, it is important to identify the relevant market in which market power might exist: this first stage requires a definition of both the relevant product and the relevant geographical market.<sup>51</sup> Secondly, it must be determined whether market power exists in the relevant market.<sup>52</sup> From this process, it becomes clear that market definition is an important tool that supports the assessment of the critical question of whether a company or companies have market power. Defining the relevant market becomes necessary, for instance, when considering whether an agreement has the effect of restricting competition under Article 101 TFEU<sup>53</sup> or whether an undertaking has a dominant position according to Article 102 TFEU.<sup>54</sup>

Useful guidance on the relevant product and the relevant geographical market definition is provided by the Commission's Notice on the Definition of Relevant Market.<sup>55</sup> By disclosing the criteria and procedures adopted in the definition of relevant markets, the Commission expects to increase the transparency of its competition policy and decision-making. Concurrently, undertakings can consider the Notice in their own internal decision-making when contemplating their competitive conduct, such as concluding certain agreements or engaging in certain behaviour unilaterally.<sup>56</sup>

So far, the 1997 Notice on Market Definition has adopted the so-called *hypothetical monopolist test* (*i.e.*, the SSNIP test) to determine whether particular products are within the same market.<sup>57</sup> The 1997 Notice relies on a conceptual framework based on price parameter within which to reflect on market definition and thus determine the boundaries of competition. However, the 1997 Notice on Market Definition too is part of the current revision process of competition rules to favour sustainable and digital transformation. Indeed, the first evidence of the shift towards polycentric competition law can be traced to the revised Market Definition Notice.

On 8 February 2024, the Commission published the Revised Relevant Market Definition Notice to align the market definition with the Commission's practice, the EU courts' case law, and new market realities, in particular sustainability and digitalisation.<sup>58</sup> It is interesting to note that the 2024 Revised Notice on Market Definition highlights the importance of going beyond the price parameter to define the relevant markets. In particular, it puts emphasis on the level of *innovation* and the *quality* of goods and

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<sup>49</sup> Whish R. and Bailey D., *Competition Law*, 10<sup>th</sup> ed., OUP, 2021, 22-25.

<sup>50</sup> Whish and Bailey (n 49); Vickers J., "Market Power in Competition Cases" in *European Competition Journal*, 2006, no. 2, 3; Posner R. and Landes W., "Market Power in Antitrust Cases", in *HarvLRev*, 1981, no. 94, 937.

<sup>51</sup> The *relevant product market* refers to all those goods or services (products) that customers consider interchangeable or substitutable to the product(s) of the undertaking(s) involved, based on the products' features, their prices and their intended use; on the other hand, the *relevant geographic market* identifies the area in which the relevant products are supplied or demanded by the undertaking(s) involved, namely the area in which the conditions of competition are sufficiently homogeneous and can be distinguished from neighbouring ones. Commission, "Notice on the definition of the relevant market for the purposes of Community competition law" [1997] OJ C 372 (1997 Notice on Market Definition), paras 7-8.

<sup>52</sup> Whish and Bailey (n 49), 26-48.

<sup>53</sup> See e.g. Case C-234/89 *Delimitis v Henninger Bräu* [1991] ECLI:EU:C:1991:91, para 16.

<sup>54</sup> See e.g. Case 6-72 *Continental Can v Commission* [1973] ECLI:EU:C:1973:22, para 32.

<sup>55</sup> 1997 Notice on Market Definition (n 51).

<sup>56</sup> *Ibidem*, paras 4-5.

<sup>57</sup> The SSNIP test requires verifying whether a Small but Significant Non-transitory Increase in Price (in the range 5% to 10%) could be raised profitably by the economic operator. If an undertaking can raise its price significantly and retain its customers, this means that the market is worth monopolising. On the contrary, if customers switch their purchases to other products, this suggests that the market is at least as wide as the other products and includes those products as well. 1997 Notice on Market Definition (n 51), paras 15-17.

<sup>58</sup> Commission, "Notice on the definition of the relevant market for the purposes of Union competition law" [2024] OJ C/2024/1645 (2024 Revised Notice on Market Definition).

services in various aspects, such as their sustainability and privacy protection.<sup>59</sup> This is the first time that sustainability and privacy protection are explicitly named in the *quality* parameter.<sup>60</sup>

When the competition assessment is based on the level of innovation or quality rather than the price parameter, the SSNIP test is difficult to apply; in particular, the SSNIP test does not work in data-related disputes which are highly innovative contexts of zero monetary price products. To face data-driven challenges, the 2024 Revised Notice on Market Definition suggests applying the so-called Small but Significant Non-transitory Decrease of Quality assessment (SSNDQ test).<sup>61</sup>

Even though the SSNDQ qualitative test poses the risk of subjective assessments, the General Court has recently stated that a precise quantitative measure of degradation of the quality of goods or services is not a compulsory prerequisite.<sup>62</sup> Indeed, it is not possible to require a precise standard of quality degradation to apply the SSNDQ test, as this would render it impracticable: “All that matters is that the quality degradation remains small, albeit significant and non-transitory”.<sup>63</sup> On the other hand, even the SSNIP test requires subjective assessments of the relevant market in certain sectors, particularly in cases where price information about substitutability is unavailable (*e.g.*, data-related cases).<sup>64</sup> Thus, it stands to reason that sustainability degradation or improvement stemming from data-related practices can indeed be considered in competition assessments.

## 2.2. The Concepts of Sustainability Evolving from Data-driven Ecosystems

It appears the Commission is embracing a market-based policy approach by incorporating sustainability considerations into its competition rules.<sup>65</sup> Similar to the emerging industrial policy,<sup>66</sup> this EU approach to competition seeks to embed the green and digital transformations into economic development. The result being the integration of sustainability into the paradigm of the (digital) social market economy.<sup>67</sup> However, neither the EGD nor the Digital Decade Policy Programme 2030 clearly define the concept of sustainability and how it is affected by the liaison with digitalisation. This section suggests a possible conceptualisation of sustainability evolving from data-driven ecosystems.

Many scholars have already noted that the conceptualisation of sustainability has not been stationary but rather complex and progressive.<sup>68</sup> In ecology, *sustainability* identifies a state that can be preserved indefinitely, but this definition has taken on distinct connotations over time.<sup>69</sup> Since the 1980s, it has been associated with the *sustainable development* model that involves a balance between economic growth, environmental protection and social well-being.<sup>70</sup> The digital strategy, the legislative and non-legislative

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<sup>59</sup> *Ibidem*, paras 15, 27, 50 and 90.

<sup>60</sup> For the debate on the difficulty of *quality* assessment see Colangelo G. and Maggiolino M., “Data Protection in Attention Markets: Protecting Privacy through Competition?”, in *Journal of European Competition Law & Practice*, 2017, no. 8, 363; Ezrachi A. and Stucke M., “The Curious Case of Competition and Quality”, in *Journal of Antitrust Enforcement*, 2015, no. 3, 227.

<sup>61</sup> 2024 Revised Notice on Market Definition (n 58), para 30.

<sup>62</sup> Case T-604/18 *Google LLC and Alphabet, Inc. v European Commission* [2022] ECLI:EU:T:2022:541, paras 177-180.

<sup>63</sup> *Ibidem*, para 180.

<sup>64</sup> Whish and Bailey (n 49), 35.

<sup>65</sup> Arguably, like any other EU institution, the Commission has a duty to integrate environmental protection into its policies, including competition policy, according to Article 11 TFEU.

<sup>66</sup> Monti G., “The European climate law: Making the social market economy fit for 55?”, in *CMLRev*, 2021, no. 58, 1321.

<sup>67</sup> Article 3(3) and Article 11 TEU.

<sup>68</sup> For a historical overview of the various conceptualisation see Du Pisani J., “Sustainable development – historical roots of the concept”, in *Environmental Sciences*, 2007, no. 3, 83.

<sup>69</sup> *Ibidem*.

<sup>70</sup> Commission, “Communication from the Commission A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development”, COM(2001) 264 final, 2. In the Brundtland Report, *sustainable development* is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Gro Harlem Brundtland, Report of the World Commission on Environment and Development: Our Common Future (1987), United Nations General Assembly A/42/427.

acts laid out in this chapter make general reference to the sustainable development model. Nonetheless, the EU's comprehensive approach to data potential differentiates between concepts of *sustainability* in relation to the benefits provided and the internal functioning of data-driven ecosystems.

As for the benefits that can be derived for the European society and economy from data-driven ecosystems, the concept of sustainability seems to still revolve around sustainable development.<sup>71</sup> Data-driven ecosystems should indeed drive the creation of well-balanced opportunities for economic growth and jobs, and ensure competitive, secure and sustainable digital technologies.<sup>72</sup> In the context of data-driven ecosystems, and despite the Commission's reference to economic growth - which is a controversial issue in the sustainable development discourse<sup>73</sup> - the sustainable development model is shifting to a focus on *qualitative* rather than quantitative parameters. Data is a non-rival resource, which means that its consumption does not decrease its availability to others and that the same data can support the life-cycle monitoring of heterogeneous products and services.<sup>74</sup> Hence, data-driven ecosystems allow the replacement of consumable resources with non-rival ones (data) while supporting the monitoring of resource consumption. Indeed, the deployment of data-driven ecosystems often incurs increases in returns to scale and scope where the consumption of rival material resources is partially replaced by the exploitation of non-rival data. The non-rivalrous nature of data may therefore circumvent the need to balance the three economic, social and environmental pillars, as they are no longer necessarily in conflict with each other. This implies a reconceptualisation of *sustainable development* from and beyond data-driven ecosystems: a sustainable development model that is not simply a quantitative environmental tempering of economic *growth*, but rather an economic *development* geared towards prioritising qualitative parameters.<sup>75</sup>

Looking at the internal functioning of data-driven ecosystems, the conceptualisation of sustainability is closely related to the consumption of data centres.<sup>76</sup> Digital infrastructure and technologies should become increasingly energy- and resource-efficient, thereby minimising their negative environmental and social impact.<sup>77</sup> The latest Energy Efficiency Directive introduces a reporting scheme of energy performance and water footprint in large data centres, giving the *energy efficiency first principle* substantial legal standing for the first time.<sup>78</sup> By 15 May 2025, the Commission shall assess the available information on the energy efficiency of data centres and propose additional measures to improve energy efficiency, including an assessment concerning the feasibility of transitioning towards a net-zero emission data centre sector.<sup>79</sup> In this regard, it is not economic growth or the market that should be sustainable, but data-driven ecosystems themselves.<sup>80</sup> Thus, the sustainability model emerging from the internal functioning of data-driven ecosystems can be identified as *ecosystem sustainability* rather than sustainable development.

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<sup>71</sup> The European Green Deal (n 10), 3; Digital Decade Policy Programme 2030 (n 8), Recital 6.

<sup>72</sup> Digital Decade Policy Programme 2030 (n 8), Article 3(e).

<sup>73</sup> Worster D., *The Wealth of Nature: Environmental History and the Ecological Imagination*, OUP, 1993, 218-219.

<sup>74</sup> Micheletti G., IDC Italia, "Report for the European Commission: The European Data Market Monitoring Tool", 2020, European Commission, available at <https://op.europa.eu/en/publication-detail/-/publication/9fb0599f-c18f-11ea-b3a4-01aa75ed71a1/language-en>, 55-56.

<sup>75</sup> Chiti E., "Verso una sostenibilità plurale? La forza trasformatrice del Green Deal e la direzione del cambiamento giuridico", in *Rivista Quadrimestrale di Diritto dell'ambiente*, 2021, no. 3, 145.

<sup>76</sup> A data centre is "a structure or a group of structures used to house, connect and operate computer systems/servers and associated equipment for data storage, processing and/or distribution, as well as related activities". Regulation (EC) No 1099/2008 of the European Parliament and of the Council of 22 October 2008 on energy statistics [2008], OJ L 304, Annex A, point 2.6.3.1.16; See n 17.

<sup>77</sup> Digital Decade Policy Programme 2030 (n 8), Article 3(h).

<sup>78</sup> The *energy efficiency first principle* refers to "taking utmost account in energy planning, and in policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective end-use energy savings, demand response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions". Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast), Article 2(2).

<sup>79</sup> *Ibidem*, Article 12.

<sup>80</sup> Compare with the analysis provided by Chiti (n 9), 35.

The different paradigms evolving from data-driven ecosystems, namely the reconceptualised sustainable development model and ecosystem sustainability can be simultaneously realised by stimulating data sharing and pooling initiatives. To be effective in these data-related initiatives, it is necessary firstly to operationalise pro-competitive collaboration between stakeholders and then incentivise competition on quality parameters.

### 3. The Direction of Digital Analytical Shortcuts

To avoid any possible conflict between the sustainability paradigms, the operationalisation need must be taken seriously. The relevant market definition is certainly an important analytical tool to identify market power, but it is not an end in itself.<sup>81</sup> To realise the benefits of the liaison between sustainability and digitalisation, and thus the twin transitions of the EU's society and economy, competition law has to deal with the issue of *spontaneity*.<sup>82</sup> Spontaneity describes a state where individuals have adequate incentives to institute appropriate patterns of economic relationships.<sup>83</sup> To solve the challenges arising from spontaneous order, other analytical shortcuts are available to guide individuals and authorities in their decision-making. These analytical toolkits need to be examined to determine whether the liaison between sustainability and digitalisation is being adequately operationalised.

Analytical shortcuts can be defined as an accelerated way of achieving targets by orientating the spontaneous order.<sup>84</sup> They include a vast array of tools and procedures that have the common capacity to simplify and rationalise competition enforcement.<sup>85</sup> Some examples included in the broad definition are safe harbours, guidelines, statements of objections, interim measures, and commitment procedures. These tools and procedures affect the reasoning characterising the enforcement of competition law, in their simplified forms of *premises*, *proxies* and *presumptions*.<sup>86</sup> This third section seeks to determine whether the liaison between sustainability and digitalisation within data-driven ecosystems is being adequately operationalised in analytical shortcuts.

As for the new safe harbours and guidelines concerning cooperation agreements, it is worth noting that the EU approach consists of an extended relaxation of competition rules to strengthen the liaison.<sup>87</sup> For instance, in certain cases of dual distribution vertical agreements are exempted from the prohibition usually imposed in competition law (*i.e.*, safe harbour). Dual distribution refers to suppliers that sell goods or services both upstream and downstream, thereby competing with their independent distributors.<sup>88</sup> In

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<sup>81</sup> Whish and Bailey (n 49), 46-48.

<sup>82</sup> See n 43.

<sup>83</sup> Aligiga and Tarko (n 42), 246-247.

<sup>84</sup> Kalintiri A., "Analytical Shortcuts in EU Competition Enforcement: Proxies, Premises, and Presumptions", in *Journal of Competition Law & Economics*, 2020, no. 16, 392-393.

<sup>85</sup> *Ibidem*.

<sup>86</sup> *Premises* refer to normative and positive assertions or propositions, which form the basis for a choice or a theory. They shape competition enforcement in many ways. For instance, the dominant premises steer administrative action and lead authorities to develop policy priorities. *Proxies* may be defined as metrics adopted to provide indirect and imperfect approximations of the investigated issues. They have two important roles in competition enforcement: adjudicators use them to draw inferences from the available evidence and to develop filters and screens with a view to demarcating lawful from unlawful conduct. Finally, *presumptions* allow for an unknown fact to be deemed as demonstrated based on proof of another fact. They enable the actor with the burden of persuasion concerning an issue to provisionally discharge it by providing proof of another issue to the standard of proof. Although premises, proxies, and presumptions are distinct, they are used in combination as well as in parallel. Moreover, they may well be replaced over time in line with developments in knowledge and shifts in the contextual environment within which competition is enforced, such as sustainable and digital contexts. See Kalintiri (n 84), 396-398.

<sup>87</sup> Guidelines on vertical restraints (n 48); Guidelines on horizontal cooperation agreements (n 48); Commission Regulation (EU) 2022/720 of 10 May 2022 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to categories of vertical agreements and concerted practices [2022] OJ L 134/4, (VBER). To monitor the revision of Horizontal Block Exemption Regulations (HBERs) see the following webpage: [https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13058-Horizontal-agreements-between-companies-revision-of-EU-competition-rules\\_en](https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13058-Horizontal-agreements-between-companies-revision-of-EU-competition-rules_en).

<sup>88</sup> VBER (n 87), Recital 12.

this scenario, the potential negative effects of the vertical agreement on the competitive relationship between the supplier and buyer at the downstream level are less relevant than the potential positive impact on competition in general.<sup>89</sup> Similarly, data-sharing between a supplier and buyer can increase the pro-competitive effects of vertical agreements, especially the optimisation of production and distribution systems. The sharing of certain information, however, may raise horizontal concerns.<sup>90</sup> Therefore, data-sharing between a supplier and a buyer in a dual distribution scenario is exempted exclusively when the information exchange is both directly related to the implementation of the vertical agreement and necessary to advance the quality of the production or distribution of goods and services (*e.g.*, the data-sharing case of Skywise).<sup>91</sup>

The revision of State aid controls resembles the new direction of antitrust rules.<sup>92</sup> The Commission suggests channelling private and public investments towards sustainable and digital infrastructures with the goal of enabling breakthrough innovations and the necessary large-scale investments to deliver on the twin transitions.<sup>93</sup> Similarly to the previously mentioned initiatives on cooperation agreements, the revision of State aid frameworks equates to an extended relaxation of the prohibitions.<sup>94</sup> For instance, based on Article 107(3) TFEU, the Commission may approve public investments funding multi-purpose data infrastructures to support the liaison between sustainability and digitalisation.<sup>95</sup> From the new safe harbours and guidelines, it is clear that the liaison is going to play a significant role in competition assessments.

Although the aforementioned tools and procedures are going to epitomise the liaison between sustainability and digitalisation within data-driven ecosystems, the reasoning affected by the initiatives also must evolve accordingly. Normative and economic premises of competition enforcement can thus consolidate the liaison. This chapter has already provided evidence that the normative statements on competition goals will consider innovation, sustainability and privacy protection in their own right. At the same time, economic statements about the pro-competitive and anti-competitive effects of conduct need to elaborate on the liaison too. In the author's opinion, competition law and its economic analysis are not free of normative influence.<sup>96</sup> Consequently, economic theories must take into account the multiple goals of EU competition law, in particular the contemporary goals of sustainability and data protection that stand out currently in competition policy, regulations, and related measures.

Together with normative and economic premises, proxies that consider sustainability degradation or improvement in data-related practices also need to be explored. Competition enforcement uses many general concepts such as *restriction*, *abuse*, *indispensability*, and others, that are difficult to establish directly.<sup>97</sup> For instance, the *indispensability* criterion of anti-competitive agreements requires a proxy for defining those situations where companies' incentives to innovate may be undermined.<sup>98</sup> In data-related disputes, it might be possible to interpret that requirement with a view to sustainable and digital considerations, following the liaison between the transitions.

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<sup>89</sup> *Ibidem*; Guidelines on vertical restraints (n 48), paras 8, 144 and 316.

<sup>90</sup> Guidelines on horizontal cooperation agreements (n 48), Section 6.

<sup>91</sup> VBER (n 87), Recital 13.

<sup>92</sup> See *e.g.* Commission, "Sixth Amendment to the Temporary Framework for State aid measures to support the economy in the current COVID-19 outbreak and amendment to the Annex to the Communication on the application of Articles 107 and 108 TFEU to short-term export-credit insurance" COM (2021) 8442 final; Commission Regulation (EU) 2021/1237 of 23 July 2021 amending Regulation 651/2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty [2021] OJ L 270/39; Regulation (EU) 2021/1153 of the European Parliament and of the Council of 7 July 2021 establishing the Connecting Europe Facility and repealing Regulations (EU) No 1316/2013 and (EU) No 283/2014 [2021] OJ L 249.

<sup>93</sup> A competition policy fit for new challenges (n 20), 17-18.

<sup>94</sup> *Ibidem*.

<sup>95</sup> Commission Regulation (EU) 2021/1237 (n 92); Regulation (EU) 2021/1153 (n 92), Recitals 1 and 43, as well as Articles 8 and 9.

<sup>96</sup> Ezrachi (n 31), 15-16 and 22-23.

<sup>97</sup> Kalintiri (n 84), 401.

<sup>98</sup> *Ibidem*, 402; Whish and Bailey (n 49), 162-173.

Finally, rebuttable presumptions imply that conducts are presumed to be anti-competitive, unless the undertakings challenge this conclusion “on the basis of supporting evidence”.<sup>99</sup> Obstacles to data-sharing practices that negatively affect sustainability should be considered unlawful unless an explicit and specific defence is provided by the company. In addition to this, in cases where the effect of a data-related practice is uncertain, statements of objections, interim measures and commitment procedures can be explored to investigate and monitor ongoing solutions with the involvement of stakeholders.<sup>100</sup>

#### 4. Final Considerations

The European Green Deal and the Digital Decade Policy Programme 2030 identify digital technologies as the *key enabler* to put the EU’s economy and society on a more sustainable path. In data-driven ecosystems, this will lead to increased use of data that provides solutions for economic development as well as social, climate and environmental challenges. At the same time, in alignment with the links between the digital and green transitions, digitalisation and data-related practices *must put sustainability at their heart* to reduce the risk of increasing greenhouse gas emissions and energy use. This liaison between sustainability and digitalisation is functionalised to achieve the climate neutrality target by 2050.

This chapter has reflected on the effects of the liaison between sustainability and digitalisation within sustainable data-driven ecosystems. It has been argued that such liaison demands competition law shift from a monocentric to a polycentric perspective. Polycentric competition law in this case implies a network of diverse actors that adjust their behaviour to the decisions made by others and share the EU’s climate neutrality ambitions. Contrary to the monocentric perspective, polycentric competition law does not limit its assessment to the strict confines of bilateral exchanges but also takes the environmental and social effects of data-related practices into account. In practice, the Commission has broadened the contents of pro-competitive disciplines to increase the weight of environmental and social goals, seeking to boost sustainability and strengthen privacy protections.

Under the ongoing revision process of competition law, sustainability and privacy protection are becoming part of EU competition law in their own right. This is particularly apparent in the 2024 Revised Relevant Market Definition that considers sustainability and privacy protection as part of the *quality* of goods and services in competition assessment. This emphasis on the quality parameter appears to be related to the reconceptualisation of *sustainable development* evolving from data-driven ecosystems together with the paradigm of *ecosystem sustainability*. To pursue simultaneously the different paradigms of sustainability, it is necessary to stimulate data sharing and pooling initiatives in a wider context of pro-competitive collaboration between stakeholders.

Beyond the relevant market definition, other analytical shortcuts have also been revised to integrate sustainability and digital considerations. For example, to solve the challenges arising from spontaneous order, analytical tools, such as safe harbours and guidelines, are available to guide individuals and authorities in their decision-making. Through this revision of analytical tools, the liaison between sustainability and digitalisation is already being operationalised in competition law. In the same vein, the reasoning affected by the analytical shortcuts must take into account the liaison between sustainability and digitalisation within data-driven ecosystems. In the author’s view, it is essential that economic premises, proxies, and rebuttable presumptions must evolve accordingly to consider sustainability and digital benefits.

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<sup>99</sup> See e.g., Case C-413/14 P *Intel v. Commission* [2017] ECLI:EU:C:2017:632, para 138; see also Case 62/86 *AKZO v. Commission* [1991] ECLI:EU:C:1991:286, para 60.

<sup>100</sup> With regard to the procedures for the adoption of interim measures and the acceptance of commitments, see Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty [2003], OJ L 1, Recitals 11 and 13, as well as Articles 5, 8 and 9. For an example of implementation at national level, see the Italian Law of 10 October 1990, n. 287 - Norme per la tutela della concorrenza e del mercato, Articles 14-bis and 14-ter; Fazio (n 38); Makris (n 39).