

Introduction

SUSTAINABILITY IN TRANSITION

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ABSTRACT: This Introduction aims at providing the basic parameters of the inquiry, which approaches sustainability from a legal-evolutionary perspective. It defines the research questions, illustrates the main findings of the study, and clarifies its relevance. After presenting the structure of the book and explaining its rationale, it introduces the other Chapters and provides some interpretative keys emerging from the issues dealt with therein. The main argument of this Introduction is as follows: the European Green Deal is revising the traditional understanding of sustainability in the EU order. A potentially important but still under-explored process of legal change is now taking place. Next to sustainable development, the Commission is gradually articulating a different and promising understanding of sustainability aimed at ensuring ecosystem integrity and ecological primacy. Like any transition process, however, this one is also marked by tensions and contradictions, certainties and ambiguities.

KEYWORDS: Ecological sustainability – Sustainable development – European Green Deal – Climate neutrality – Transition – Regulation.

SUMMARY: 1. Sustainability and the Green Deal. – 2. Basic parameters: ecological sustainability as a policy and legal objective. – 3. Redefining the balancing exercise: ecological sustainability and sustainable development. – 4. The structure and findings of the inquiry. – 4.1. The agri-food transition. – 4.2. The energy transition. – 4.3. The ecological transition. – 4.4. The digital transition. – 4.5. The economic transition. – 5. Sustainability in transition: four interpretative keys. – 5.1 Regulatory entanglement. – 5.2. Resistance: the enduring relevance of sustainable development. – 5.3. Innovation: the penetration capacity of ecological sustainability. – 5.4. The significance of ecological sustainability for the Green Deal.

1. Sustainability and the Green Deal

Multiple and challenging transitions have been triggered by the Green Deal, the multifaceted strategy for climate neutrality launched in 2019 by the European Commission.¹ This is hardly surprising when considering climate neutrality as a highly transformative target, pushing for a rethinking

¹ See The European Green Deal, COM (2019) 640.

of a wide array of key policy areas capable of deeply impacting the legal, economic, social, and cultural construct of the European Union (EU).² Equally unsurprisingly, sustainable development is put by the Commission at the centre of all those transitions, which can be appropriately managed only by taking into consideration and balancing economic, social and environmental interests.

While such explicit reference to sustainable development is coherent with the macro-objective of climate neutrality, as well as clearly in line with a deeply rooted EU political and legal culture, this book argues that the European Green Deal is revising the traditional understanding of sustainability in the EU order. A potentially important but still under-explored process of legal change is now taking place.³ Next to sustainable development, the Commission is gradually articulating a new and promising understanding of sustainability, one aimed at ensuring ecosystem integrity and ecological primacy.

The ongoing process of redefinition of sustainability raises several significant questions, all revolving around the ability of the new policy objective of ecosystem sustainability to penetrate the EU legal order and orientate the multiple transitions undergoing its regulatory space. How is sustainability precisely shaped in the different policies and legislations stemming from the Green Deal? To what extent do such policies and legislations integrate the goal of biodiversity protection and ecosystem restoration within their respective logics and mechanisms? What model of sustainability is promoted by the EU legislator in each policy field, and through which options and regulatory schemes is it constructed and operationalized? How consistent and reasonable are the overall regulatory strategies in light of the specific objectives of each transition? And what are the potential implications of the emergence of ecological sustainability for the overall construction of the Green Deal?

² *Ibidem*, 4; in the legal scholarship the transformative force of climate neutrality is explored by Chiti E., “Managing the ecological transition of the EU: the European Green Deal as a regulatory process”, in *CMLRev*, 2022, 59, 19-48, discussing the impact of the European strategy for climate neutrality on the EU substantive constitution.

³ On the need for a dynamic understanding of law and a perspective attentive to the evolution of legal paradigms, see the seminal article by Pound R., “Law in Books and Law in Action”, in *American Law Review*, 1910, 44(1), 12-36. In European legal scholarship, the importance of exploring the transformations of (administrative) law is underscored by Cassese S., “Le trasformazioni del diritto amministrativo dal XIX al XXI secolo”, in *Riv. trim. dir. pubbl.*, 2002, 1, 27-40; Aubry J.-B., “La bataille de San Romano. Réflexions sur les évolutions récentes du droit administrative”, in *AJDA*, 2001, 11, 912-926; and D’Alberti M. (ed.), *Le nuove mete del diritto amministrativo*, il Mulino, 2010, 1-187.

These are the relevant research questions that this book aims at addressing, by navigating the dynamics of the many transitions occurring in the overall horizon of European climate neutrality. As the various Chapters will show, these dynamics are not always as harmonious and linear as one might assume, but are rather characterized by tensions, conflicts, and underlying ambiguities.

This Introduction aims at providing the basic parameters of the inquiry, presenting its main findings and clarifying its relevance. It opens by discussing the meaning of the ongoing articulation of sustainability as an EU objective. In particular, it asks how ecological sustainability has been formulated as a policy and legal objective in the framework of the Green Deal (§ 2) and discusses the distinction between ecological sustainability and sustainable development (§ 3). Coherently with such premises, this book aims at exploring the ways in which the EU legislator is in the process of actually shaping sustainability in the context of the multiple transitions triggered by the Green Deal: the structure and main findings of the inquiry are then presented (§ 4). Finally, the Introduction provides four overall interpretative keys emerging from the case-studies and issues dealt with in the various Chapters (§ 5).

2. Basic parameters: ecological sustainability as a policy and legal objective

Ecological sustainability is an indispensable component of any sound strategy against climate change, especially one aimed specifically at achieving climate neutrality. Indeed, ecosystem health is as important as technological innovation in reaching a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases, as it allows forests, soils and other fundamental ecosystems to operate as carbon sinks, storage and substitution. In the academic debate surrounding the Green Deal, this is recognized both by those who promote and those who oppose the EU strategy for climate neutrality. In spite of deep disagreements about the possibility to reduce absolute emissions of carbon dioxide while attempting to grow economically in the temporal horizon of 2050, most positions converge on the idea that protecting and restoring nature is to be a component of any credible action against climate change.

The same point has been openly made by the Commission in the three main strategies developing the ecological dimension of the Green Deal, namely, the Biodiversity Strategy, the Soil Strategy and the New Forest Strategy,⁴

⁴See, respectively, the EU Biodiversity Strategy for 2030, COM (2020) 380; the EU

where nature is presented as a «vital ally» in adapting to and fighting against climate change and it is stressed that nature-based solutions are essential for emission reduction and climate adaptation. It has also been formalized in the European Climate Law, which stipulates that restoration of ecosystems should «assist in maintaining, managing and enhancing natural sinks and promote biodiversity while fighting climate change»,⁵ and recently reasserted by the European Environment Agency (EEA) and the European Scientific Advisory Board on Climate Change (Advisory Board).⁶

It is appropriate to consider the way in which the Commission has developed ecological sustainability as a new policy objective. To begin with, ecological sustainability features as part of a wider framework of assumptions of ecosystem ecology, starting with the idea that biological diversity has many different components, from species and genetic diversity to the variety of the energy processes internal to each ecosystem. Moreover, ecological sustainability requires two complementary activities, namely preservation and restoration of ecosystems: the former tackles a number of key drivers of biodiversity loss, such as changes in land and sea use and over-exploitation, while the aim of the latter is to reverse biodiversity loss. In addition to this, and most importantly, ecological sustainability is defined in a clearly functional way: ecosystems are healthy, and therefore sustainable, when they are capable of providing their ecosystem services. A clear illustration of this understanding is provided by the Commission's Communication on Managing climate risks, where ecosystem health is unambiguously associated to the provision of «life-supporting services such as freshwater, food and biomaterial, carbon sequestration, soil and coastal erosion control, flood and drought prevention, cooling of densely populat-

Soil Strategy for 2030, COM (2021) 699; and the New EU Forest Strategy for 2030, COM (2021) 572.

⁵Regulation (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 (European Climate Law), O.J. 2021, L 243/1, Whereas 23.

⁶See, respectively, EEA, Report 01/2024, presenting the first European Climate Risk Assessment (EUCRA); and European Scientific Advisory Board on Climate Change, Towards EU climate neutrality. Progress, policy gaps and opportunities. Assessment Report 2024, Luxembourg, Publications Office of the European Union, 2024, 181-207. For a discussion on the challenging relationship between the EEA and the Advisory Board, and the risks of regulatory conflicts between these two technical bodies assisting the Commission in achieving climate neutrality, see Giorgi A., «The EU Green Deal and the Transformations of the European Administrative System: Does the 'Epistemic Leadership' of the Scientific Advisory Board Push the Agency Model Over the Sunset Boulevard?», in *Eur. Papers*, 2023, 8(2), 879-900.

ed urban areas».⁷ In the same vein, the Soil Strategy argues that soils can be considered to be healthy ecosystems «when they are in good chemical, biological and physical condition, and thus able to continuously provide as many ecosystem services as possible», such as, for example, providing food and biomass production, absorbing, storing and filtering water, providing the basis for life and biodiversity, acting as a carbon reservoir and as a source of raw materials.⁸ The key concept is that of «resilience», elaborated in a large and deep scientific debate⁹ and used by the Commission in the specific sense of «resilience of ecosystem functions».

The Commission's ecological view is highly demanding. The new objective of ecosystem health implies a duty to protect and restore the «integrity» of ecological systems. Integrity is essential to the capability of an ecosystem to provide its basic services. The objective of protecting and restoring healthy and resilient ecosystems may only be achieved by ensuring their functional integrity. This is strictly connected, in the line of reasoning followed by the Commission, to the search for mechanisms to support ecosystem recovery, including those imposing limitations on economic and social concerns. Taken seriously, the very idea of ecological integrity, on which the goal to protect and restore healthy and well-functioning ecological systems is based, opens the way to a potentially radical understanding of the ecological concerns in the Green Deal.

When moving from policy documents to legislations, however, the ecological approach taken by the Commission seems less straightforward and more nuanced: the way in which the policy objective of ecological sustainability has been legally shaped in particular areas suggests that the EU legislator is applying it in a rather relaxed way.

Consider, for example, the main ecological legislation stemming from the Green Deal, namely the «Nature Restoration Law».¹⁰ It is designed to ensure the recovery to biodiverse and resilient nature across the EU territory and it encapsulates a strong understanding of ecological sustainability. More precisely, the Nature Restoration Law expressly sets out the «over-

⁷ COM (2024) 91, 15.

⁸ See e.g. COM (2021) 699, cited *supra* fn. 3, 4.

⁹ See e.g. Capdevila P. et al., «Reconciling resilience across ecological systems, species and subdisciplines», in *J. Ecol.*, 2021, 109, 3102-3113; and Chambers J.C, Allen C.R. and Cushman S.A., «Operationalizing Ecological Resilience Concepts for Managing Species and Ecosystems at Risk», in *Front. Ecol. Evol.*, 2019, 7, Article 241, 1-27.

¹⁰ Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature restoration and amending Regulation (EU) 2022/869, O.J. 2024, L 29.07.2024.

arching objective» to contribute to «the long-term and sustained recovery of biodiverse and resilient nature across the Member States' land and sea areas through the restoration of degraded ecosystems». ¹¹ Restoring ecosystems to good conditions requires their full functionality, that is their capability to provide a range of essential ecosystem services: biodiverse ecosystems «deliver, if in good condition, a range of essential ecosystem services». ¹² Moreover, the goal of ecosystem health is directly associated to climate neutrality, coherently with the overall construction of the Green Deal. In particular, it is stressed that healthy, biodiverse agroecosystems, forests and marine ecosystems provide an important contribution both to a number of economic sectors, such as agriculture, forestry and fisheries, and to the long-term objective of mitigating climate change. Crucially, ecosystem health is given priority over economic and social concerns: it is not insulated from such concerns, as it is presented as functional to the social and economic activities of human beings; but it is designed as a pre-condition for human activities, a goal which is important to achieve in order to have a number of socio-economic benefits. Healthy ecosystems are considered essential both for our long-term survival and for our well-being, prosperity and security, as they «contribute to a broad range of socio-economic benefits, depending on the economic, social, cultural, regional and local characteristics». ¹³

Yet, this clearly formulated ecological objective, implying a strong understanding of ecosystem health, is not accompanied by an equally well-defined set of implementing measures. Actually, the Nature Restoration Law sets several binding restoration targets and obligations concerning a broad range of ecosystems, leaving to Member States the task to identify the measures through which such objectives should be achieved. The key instrument is that of planning. Member States are asked to strategically plan the appropriate restoration measures and to organize them in «national restoration plans». ¹⁴ Such a regulatory technique is obviously reasonable, given the technical complexity of the issues at stake, as well as the need to consider the diversity of national situations. Unsurprisingly, the Nature Restoration Law stresses the fact that national restoration plans should be based on the best available scientific evidence and take account of the specific needs in the relevant territories. The choice for national planning, though, is also highly problematic. It assumes that domestic authorities will

¹¹ *Ibidem*, Article 1. See also Recitals 14 and 65.

¹² *Ibidem*, Recital 14.

¹³ *Ibidem*.

¹⁴ *Ibidem*, Articles 14-19.

be able not only to ensure the consistency of the identified restoration measures with those laid down in other plans required by the Green Deal legislation, including the adaptation plan and the integrated national energy and climate plans, but also to cooperate with other Member States to ensure restoration across borders. Moreover, and most importantly for our purposes, the EU legislator, in spite of all procedural and substantive details laid down in the relevant provisions, leaves unaddressed the key problem of explaining when and how exactly the priority of ecosystem health over economic and social concerns should be operationalized. This is a task entirely left to Member States' administrations.

Another example is provided by the Regulation to curb EU-driven deforestation and forest degradation.¹⁵ Forest health, presented as a crucial nature-based opportunity for climate mitigation, is specifically described as the resilience of ecosystems and their services.¹⁶ Unlike the Nature Restoration Law, however, the objective of the Regulation is not that of restoring the integrity of forests as functionally healthy ecosystems and to give it priority over economic and social interests. More modestly, the Regulation aims at «sustainably using» forests, that is at restoring forests as ecosystems at the same time healthy and providing subsistence and income to human beings. The functional integrity of forests is not a pre-condition for social and economic well-being. Rather, it is a desired outcome that the EU legislator aims at achieving by orienting the cycle of production and consumption. Coherently with such perspective, the Regulation lays down a set of instruments which should both minimize «consumption of products coming from supply chains associated with deforestation or forest degradation» and increase EU demand for 'deforestation-free' commodities and products.¹⁷ In this case, the regulatory framework aims at promoting forest integrity and health without at the same time prioritizing it over economic and social concerns.

¹⁵ Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) 995/2010, O.J. 2023, L 150/206.

¹⁶ See e.g. the first Recital, stating that forests provide a broad variety of environmental, economic and social benefits, maintain ecosystem functions, help protect the climate system, provide clean air and play a vital role for the purification of waters and soils as well as for water retention and recharge.

¹⁷ *Ibidem*, 1.

3. Redefining the balancing exercise: ecological sustainability and sustainable development

If ecological sustainability is gradually emerging as an EU objective, what is its relationship with the fundamental declination of sustainability under EU law, sustainable development?

The starting point to address this uneasy question may be the Commission's view. While formulating ecological sustainability as a demanding policy objective, calling for the functional integrity of ecosystems and inevitably responding to the logic of ecological primacy, the Commission is not explicitly arguing that ecological sustainability is a goal distinct from sustainable development. On the contrary, it seems to maintain a unitary narrative, one in which ecological sustainability and sustainable development are part of the same political and legal discourse. This is in line with the overall Treaty framework, in which sustainability is clearly formulated in the terms of sustainable development,¹⁸ as well as with Article 37 of the Charter of Fundamental Rights, requiring Member States to «integrate» and «ensure» a high level of environmental protection and the improvement of the quality of the environment in the policies of the Union, «in accordance with the principle of sustainable development».¹⁹

¹⁸ See the Preamble of the Treaty on the European Union (TEU, where Member States reaffirm their determination «to promote economic and social progress for their peoples, taking into account the principle of sustainable development»; and Article 2 TEU. On the legal relevance of sustainable development in the EU order, which has been conceptualized either as a legal principle or as an objective, see Bándi G., “Principles of EU Environmental Law Including the (Objective) of Sustainable Development”, in Peeters M. and Eliantonio M. (eds.), *Research Handbook on EU Environmental Law*, Elgar, 2020, 36-53; Barral V., “The principle of sustainable development”, in Krämer L. and Orlando E. (eds.), *Principles of Environmental Law*, Elgar, 2017, 103-114; and Verschuuren J., “The growing significance of the principle of sustainable development as a legal norm”, in Fisher D. (ed.), *Research Handbook on Fundamental Concepts of Environmental Law*, Elgar, 2016, 276-305.

¹⁹ For a particularly clear formulation of such understanding of sustainable development see Case C-371/98, *First Corporate Shipping Ltd*, ECLI:EU:C:2000:600, as well as the Opinion of Advocate General Léger, ECLI:EU:C:2000:108. In particular, Advocate General Léger argues that «[t]he concept ‘sustainable development’ does not mean that the interests of the environment must necessarily and systematically prevail over the interests defended in the context of the other policies pursued by the Community in accordance with Article 3 of the EC Treaty [...]. On the contrary, it emphasises the necessary balance between various interests which sometimes clash, but which must be reconciled» (para. 54). The reasoning goes on by clarifying that «[t]o reconcile these diverse interests in the context of ‘sustainable development’, the Treaty on European Union introduced the principle of ‘integration’ in Article 130r(2) in fine» (para. 57).

Such position seems to reflect the view that the goal of ecosystem health simply represents an articulation of the traditional understanding of environmental protection as «social regulation».²⁰ By referring to biodiversity, in other terms, the EU is modernizing and updating its understanding of environment, now presented as a multiplicity of ecosystems. However, this does not change the overall idea, inspired by the rationale and conceptual framework of ecological modernization,²¹ that the protection of the environment should be internalized in the market and conceived as a set of legal tools to address a specific type of market failures. According to this view, the new focus on ecological sustainability simply reconceptualizes environment as nature and ecosystems, while confirming that environmental concerns should be balanced with economic and social interests and integrated in the definition and implementation of other policies and actions, as required by sustainable development under EU law.

Our reading of the ongoing legal process, however, is different. We observe that ecological sustainability redefines the balancing exercise between environmental, social and economic interests, which is at the very heart of sustainable development. This is a consequence of the ecological construction followed by the Commission when articulating the policy objective of ecosystem health: as previously highlighted, such construction is rooted on the integrity of ecosystems and their capability to provide their essential services, two functional features that are determined by scientific parameters, laid down by ecology as a scientific discipline, and that require approaches for supporting ecological recovery.

In its most radical version, the search for ecosystem integrity necessarily implies «ecological primacy». Taken seriously, the very idea of ecological integrity assumes that ecological limits must have primacy over social and economic regimes, when this is necessary to protect and restore ecosystems in danger or in bad conditions.²² In this understanding, ecosystem integrity

²⁰ For a discussion of the distinguishing features and rationale of social regulation see Joerges C., “Bureaucratic Nightmare, Technocratic Regime and the Dream of Good Transnational Governance”, in Joerges C. and Vos E. (eds.), *EU Committees: Social Regulation, Law and Politics*, Hart, 1999, 3-18; and Majone G., *Regulating Europe*, Routledge, 1996, 1-61.

²¹ On the ability of ecological modernization prescriptions to influence and shape European environmental legal and political discourse from the mid-1980s, see Chalmers D., “Inhabitants in the Field of EC Environmental Law”, in Craig P. and de Búrca G. (eds.), *The Evolution of EU Law*, OUP, 1999, 672-684; Andersen M.S. and Massa I., “Ecological modernization – origins, dilemmas and future directions”, in *J. Environ. Policy Plan*, 2000, 2(4), 337-345; and Gouldson A. and Murphy J., “Ecological modernization in the European Union”, in *Geoforum*, 1996, 27(1), 11-21.

²² This is a point made by the legal scholarship articulating a normative vision of a

cannot be subject to negotiation or balancing with social and economic interests, but it operates as an autonomous goal.

Such approach is exemplified by the Nature Restoration Law. As already highlighted, in such legislation ecosystem health is given priority over economic and social concerns, in line with the logic of ecological primacy. Ecosystem health is certainly presented as functional to the social and economic activities of human beings. But it is also clearly designed as a precondition for human activities. A further example is the «strict protection» regime for primary and old-growth forests envisaged in the New EU Forest Strategy. Admittedly, such regime has not yet been made legally binding, but only indirectly reaffirmed by the legislative proposal on a monitoring framework for resilient European forests.²³ What is important, however, is the underlying rationale of the envisaged regime. Primary and old-growth forests are ecosystems of particular importance, given their exceptional biodiversity value and capability to store significant carbon stocks and to provide critical ecosystem services. For this reason, they require a particularly strict protection, leaving the dynamic of the forest cycle to natural processes and limiting human activities.

This is not, however, the only possible understanding of ecological sustainability. In a second version, ecological sustainability promotes the idea that regulation should enable economic and social activities that may positively contribute to ecosystem recovery, rather than to economic development. Such version of ecological sustainability implies some kind of balancing, as in the sustainable development paradigm, but it stipulates that the balancing exercise should be specifically oriented toward identifying measures that attenuate anthropogenic pressures responsible for ecosystem degradation and enable ecological recovery.

The EU regulatory measures offer many examples of this second regulatory approach, from biodiversity protection in the agri-food sector to mitigation of biodiversity risks in the energy and economic transition. One example is provided by Commission Regulation (EU) 2023/334, prohibiting the use of some pesticides to protect pollinators, including bees.²⁴ By

new «ecological law»: see Anker K. et al., *From Environmental Law to Ecological Law*, Routledge, 2021, 1-284; Sbert C., *The Lens of Ecological Law: A look at Mining*, Elgar, 2020, 1-240; Bosselmann K., “The Rule of Law Grounded in the Earth: Ecological Integrity as a Grundnorm”, in Westra L. and Vilela M. (eds.), *The Earth Charter, Ecological Integrity and Social Movements*, Routledge, 2014, 3-12; and Garver G., “The Rule of Ecological Law: The Legal Complement to Degrowth Economics”, in *Sustainability*, 2013, 5, 316-337.

²³ COM (2023) 728.

²⁴ Commission Regulation (EU) 2023/334 of 2 February 2023 amending Annexes II