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FROM SUSTAINABILITY TO DEGROWTH: CONFRONTING NEOLIBERAL LOGIC IN THE ECOLOGICAL-DIGITAL TWIN TRANSITION

Abstract
This article revisits Bruno Latour's call for a 'new climate regime' to critique the dominant frameworks that have shaped responses to climate change since the 1970s. Sustainable development has been largely co-opted to sustain economic growth; environmental justice has raised crucial questions of equity but remains constrained by neoliberal paradigms; and digitalization, often promoted as a green solution, deepens extractivist and energy-intensive dynamics rather than transforming them. Together, these approaches obscure the ontological and political shifts required to face what Latour describes as the "new instability of nature". Drawing on decolonial and post-development perspectives, the article argues for a paradigm that moves from systems of production toward systems of generation, foregrounding relational, locally embedded, and pluriversal practices. Only by embracing such an earthbound praxis – attentive to interdependence and shared responsibility among humans and more-than-human agent – can climate governance escape the illusions of green growth and address the roots of ecological breakdown.

Keywords: Climate Regime, Digital Transition, Environmental Justice, Neoliberalism, Sustainable Development

1. *Introduction*

This essay argues, following Bruno Latour, that we currently face a 'new climate regime' and «a new instability of nature»[1], requiring a departure from the very concept of 'nature' that historically has informed our understanding of and solutions for today's environmental and climatic crisis[2]. Such a concept, Latour states in *Face à Gaïa,* «now appears as a truncated […] simplified […] political representation of the world's otherness»[3]. What is required is not merely a reframing of environmental problems, but a profound ontological shift – a reconsideration of what it means to exist and act in a world shaped by plural, entangled agencies. Rather than seeking linear explanations or systemic fixes, Latour invites us to attend to the complex mediations through which hu-

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1 B. Latour, *Face à Gaïa: Huit conférences sur le nouveau régime climatique*, La Découverte, Paris 2015, pp. 11-49. Please note that all translations from the original version are by the authors.

2 B. Latour, *Politiques de la nature: Comment faire entrer les sciences en démocratie*, La Découverte, Paris 2004. D. Chakrabarty, *The climate of history: Four theses*, in «Critical Inquiry», 35, 2009, pp. 197-222. P. Charbonnier, *Abondance et liberté: Une histoire environnementale des idées politiques*, La Découverte, Paris 2020.

3 B. Latour, *Face à Gaïa*, cit., p. 51.

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mans and non-humans co-construct hybrid realities[4]. From this standpoint, the 'critical zone' of environmental transformation emerges not as a space of crisis alone, but as a site for rethinking agency, interdependence, and responsibility. This in turn calls for new paradigms to guide us through a just and viable environmental transition.

Longstanding approaches to climate change – notably sustainable development and environmental justice endeavors, but also the more recent calls for a twin environmental and digital revolution – fail to clearly address the plural and entangled agencies evoked by Latour. They encourage solutions that maintain the *status quo*, rather than addressing the fundamental causes of the environmental and climate crisis. For example, while digitalization has brought about new ways to quantify, model, monitor and ultimately predict climate change and complex environmental issues with the hope of managing a just and efficient environmental transition, recent research indicates that digitalization represents a heavy burden on the environment[5].

This article discusses various responses to climate change since the 1970s, focusing particularly on degrowth versus sustainability approaches, and on the environmental justice paradigm. It argues that sustainability approaches were co-opted to serve political and economic rather than environmental issues and that as a result they lost their capacity to enact real transformative change. The environmental justice paradigm developed partially to underline the deeply inequitable character of the climate crisis, and to address the issue of who should bear the burden of climate change. However, it also lacks substantive momentum within a political context that remains predominantly structured by capitalist and neoliberal paradigms, which frame economic growth as contingent upon market-driven mechanisms.

The article then examines the recent call to integrate environmental and digital transformations, warning that digitalization on its own cannot resolve the climate crisis and may, if uncritically promoted, obscure the need for more systemic environmental action. While predictive digital models increase our understanding of climate change and, in some cases, also help optimize sustainable processes linked to a circular economy model, digitalization *per se* does not provide a solution to the climate crisis. This is so because digitalization dramatically increases the use of the resources responsible for climate change and contributes to the processes accelerating it, notably in its latest reiteration via generative AI models. The digital transformation fails to challenge the foundational political, social, and economic capitalist model responsible for climate change. It is intrinsically linked to it and can be seen as a continuation of the technological developments behind global warming and the advent of the Anthropocene[6].

4 B. Latour, *Politiques de la nature*, cit.

5 F. Creutzig *et alii*, D*igitalization and the Anthropocene*, in «Annual Review of Environmental Resource*s*», 6, n. 47, 2022, pp. 479-509. UNESCO, *Smarter, Smaller, Stronger: Resource-Efficient Generative IA & The Future of Digital Transformation*, UNESCO, Paris 2025. J. O'Donnel, C. Crownhart, *We did the Math on AI's Energy Footprint. Here's the Story You Haven't Heard*, in «MIT Technology Review», May 20, 2025 https://www.technologyreview.com/2025/05/20/1116327/ai-energy-usage-climate-footprint-big-tech/

6 F. Creutzig *et alii*, D*igitalization and the Anthropocene*, cit.

Revisiting Latour's call for a new climate regime, the article summons recent approaches linked to decolonial theory in its last section, to argue that we are in dire need of a different paradigm, or set of paradigms, mostly embedded in local understandings of environmental change but moving beyond the environmental justice model. The question then is how we can transform our current climate regime to address the «new instability of nature» evoked by Latour to provide viable and truly sustainable answers to climate change.

2. *Responses to Climate Change since the 1970s: Degrowth versus Sustainability Approaches*

As Aykut and Dahan have shown in *Gouverner le Climat? 20 Ans de Négociations Internationales*, the notion 'climate regime' has a long history in the field of international relations, where it traditionally refers to the political, legal, and institutional frameworks that govern global affairs[7]. A 'regime', in this sense, refers to «the political arrangements, treaties, international organizations, set of legal procedures» that structure and organize international politics»[8]. 'Regimes' are normative frameworks constraining governments into compliance with internationally negotiated laws and are considered a means towards the «progressive emergence of an international system regulated by norms and institutions»[9]. They are international governance mechanisms. When applied to climate change, however, regime takes on an added multi-dimensionality by integrating scientific and discursive dimensions[10]. Consequently, as Aykut and Dahan argue,

> the climate regime has been based on three main elements: (1) a political process and scientific expertise that are separate but closely linked; (2) a 'burden-sharing' strategy […] with CO_2 emission reduction targets and carbon stabilization objectives, the definition of which is an essential distinction in climate negotiations; and, finally, (3) a distinction between industrialized and developing countries which was initially very clear, but which has tended to become blurred with the rise of the major emerging countries.[11]

It is this approach to climate governance that Latour challenged arguing that we need a 'new climate regime' that rethinks the ontological and political foundations of our response to climate change.

Concerns with climate change began to be voiced more earnestly in the 1970s amidst wider environmental concerns regarding the preservation of nature, industrial pollution or the adverse effects of industrial farming to name just a few. Two events stand out: the

7 S.C. Aykut, A. Dahan, *Gouverner le climat? 20 ans de négociations internationales*, Science Po Les Presses, Paris 2015, pp. 63-65.
8 Ivi, p. 61.
9 Ivi, p. 62.
10 Ivi, p. 67.
11 Ivi, p. 66.

publication of *Limits to Growth* by the Club of Rome in 1972, and the United Nations' Stockholm Conference on the Human Environment in the same year that led to the establishment of the United Nations Environment Program. UNEP was a first step towards the establishment of a global agenda on the environment, seeking to highlight the importance of a healthy environment for people everywhere[12]. It especially raised awareness globally about the importance of preserving the planet. Its mandate was «to monitor the state of the environment, inform policy making with science and coordinate responses to the world's environmental challenges»[13]. *Limits to Growth*, written by a team of MIT experts under the direction of Donella Meadows, was by far more drastic in its stance denouncing Western based economic models promoting industrial development and consumption[14]. It defined economic growth as intrinsically untenable over the long term and advocated a 'zero growth' strategy. The authors maintained that a downscale in production and consumption was needed to ensure long-term sustainability in harmony with planetary limits. They called for a drastic change in our way of being and our productive systems, and advocated degrowth to maintain our standards of living. Highly contested, widely read but still largely unpopular among economists and policy makers at the time, Dennis Meadows argued in 2022 that the book «looked at what was scientifically known and then tried to trace out its political consequences»[15]. In a world driven by economic growth largely based on the exploitation of fossil fuels, its premises made it highly contested for all except diehard environmentalists. UNEP's approach to environmental issues and eventually climate change proved more amenable and less drastic.

Over the 1980s, a whole set of institutions and organizations saw the day, alongside working-groups, experts, and the like, to address the issue of climate change which progressively displaced other environmental issues. Climate change was linked to global warming, the greenhouse effect and CO_2. Naturally, efforts began to coalesce around how to limit and diminish CO_2 emissions world-wide. Within this framework, the publication of the Brundtland Report, *Our Common Future*, by the UN World Commission on Environment and Development under the aegis of UNEP in 1987, marked a new era in the quest to find solutions to the impending climate catastrophe by aligning environmental protection and social equity with economic growth[16]. The Brundtland Report identified problems while providing viable, albeit moderate, solutions. It replaced calls for degrowth with a model that allied socio-environmental concerns and economic goals. Sustainable development, as defined in the report, became

12 United Nations Environment Programme, *UNEP: 50 years of environmental milestones*, 2022, https://www.unep.org/environmental-moments-unep50-timeline (last access 30-9-2025).

13 *Ibidem*.

14 D.H., Meadows, D.L. Meadows, J. Randers, & W.W. Behrens. *The Limits to Growth*, Universe Books, New York 1972.

15 R. Heinberg, R. *Dennis Meadows on the 50th anniversary of the publication of The Limits to Growth*. 2022. https://donellameadows.org/dennis-meadows-on-the-50th-anniversary-of-the-publication-of-the-limits-to-growth/ (last access 30-9-2025).

16 G.H. Brundtland, (ed.), *Our common future: Report of the World Commission on Environment and Development*. United Nations 1987. https://ambiente.wordpress.com/wp-content/uploads/2011/03/brundtland-report-our-common-future.pdf (last access 30-9-2025).

a global catchword to address climate change while also holding back its progress. Embedded in sustainability there was and still is the necessity to economically justify environmental transformation – there is no valid or viable environmental protection without economic growth. Sustainable development thus represents the alliance of environmental and social concerns with economic viability. It largely attempts to maintain economic growth while being environmentally and socially equitable and, in its own words, meet « the needs of the present without compromising the ability of the future generation to meet their own needs»[17].

The Brundtland Report illustrated the state of the planet in stark terms, pointing to «environmental trends that threaten to radically alter the planet, that threaten the lives of many species upon it, including the human species»[18]. But, while it mentioned limits, these were not considered absolute. Overall, it made of sustainable development a human-centric, measured response to climate change with the help of technology:

> The concept of sustainable development does imply limits – not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth.[19]

There is no call for drastic action here as there are only 'limitations' to human-generated, adverse environmental trends. Technological innovation could be and was indeed considered a means to usher in a 'new era of economic growth', albeit more respectful of the environment.

As Aykut and Dahan suggest, sustainable development was from the start a «political concept, simultaneously normative and performative, that advocates a political alternative»: it does not present itself as an alternative to capitalism's growth-based model, but as a 'way out' that «integrates within the economy the non-economic costs of production»[20]. Retrospectively, the economic pole of the triad 'environment, society, economy' proper to sustainability took on such an exclusive role that it largely neutralized both its environmental and social aspects. For Aykut and Dahan, this occurred following the fall of the Berlin Wall and in the aftermath of the major climate conference in Rio de Janeiro in 1992[21].

Despite the adoption of Agenda 21's impressive list of goals during the Rio de Janeiro Climate Summit of 1992, results linked to sustainability efforts have been insufficient. One can link this to the increasing influence of neoliberal, deregulated capitalism and the onset of globalization. Over the years, sustainability has been stripped of its potential transformative power. While the concept still resonates, it sadly lacks the impetus and

17 Ivi, p. 24.
18 Ivi, p. 12.
19 Ivi, pp. 24-25.
20 S.C. Aykut, A. Dahan, *Gouverner le climat? 20 ans de négociations internationales*, cit., p. 55.
21 *Ibidem*.

force of its original framework and expectations. In 2015, Edwin Zaccai noted that now that sustainability «has become largely consensual, it can be criticized for being relatively superficial, or even for legitimizing the pursuit of activities whose harmful effects on the environment remain little changed in practice»[22]. Despite this and other critical appraisals, however, sustainable development remains the primary framework within which governments, NGOs and private companies operate when addressing environmental issues today. As a result, other approaches have emerged calling for more drastic actions to combat climate change.

3. *Environmental Justice as an Emerging Paradigm since the 1980s*

Latour's call for a 'new climate regime' responds to the ineffectiveness of three decades of international negotiations aimed at curbing CO_2 emissions and climate change. North-South disputes over responsibility, along with conflicts about future scenarios and political choices, have largely paralyzed efforts toward durable, collective solutions to climate change. And while many countries have adopted legislation moving towards sustainable development targets, seeking to lower our carbon imprint, this has not been sufficient essentially because most recommendations are neither legally binding nor significantly enforced. Embedded in the debates around notions of climate change and the climate regime are questions about equity and the responsibility of the different actors at its source. It is within this framework that a set of new players emerged, mostly anchored in local communities but having a global reach. Climate and environmental justice initiatives fall under this rubric. They address issues related to recognitional, procedural and distributional justice in relation to resource management, land conflicts, biodiversity conservation, waste management or nuclear energy to mention just a few[23].

Environmental justice, according to David Schlosberg, demonstrates the disproportionate environmental impacts of economic activities for the most marginalized communities and points to a «recognition of the much more broadly defined conception of environment as 'where we live, work, and play»[24] as opposed to environmental sanctuaries or nature preservation areas. What Schlosberg names sustainable 'materialism' in opposition to 'development' refers to the emergence of alternative political and economic systems at the community level[25]. Where successful, these movements, often community-led and indigenous, have countered the lethargy intrinsic to the internation-

22 E. Zaccai, *25 ans de développement durable, et après ?* PUF, Paris 2011. See E. Zaccai, *Développement durable : l'idéologie du XXIe siècle*, in «Grands Dossiers Sciences Humaines», 14, 2014.

23 A list of initiatives and projects can be consulted via the *Atlas of Environmental Justice* at https://ejatlas.org/ (last access 30-9-2025).

24 D. Schlosberg, *Theorising environmental justice: the expanding sphere of a discourse*, in «Environmental Politics», 22, n. 1, 2013, p. 39.

25 D. Schlosberg, L. Craven, *Sustainable Materialism: Environmental Movements and the Politics of Everyday Life*, Oxford University Press, Oxford 2019.

al governance practices of the past three decades also challenging the circular economic model underpinning mainstream sustainability approaches. Willi Hass (*et al.*) and Joan Martinez-Allier (*et al.*) argued that: «the industrial economy is not circular; it is entropic»[26]. For Martinez-Alier environmental conflicts, often sidelined in sustainable development discourse, stem from the overuse of resources and ecological degradation, and frequently overlap with social struggles tied to unequal access, identity, and institutional regimes[27].

By addressing circumscribed, concrete problems, environmental justice movements have raised awareness globally of the challenges faced by communities locally, slowly moving away from sustainable towards more equitable environmental solutions. In so doing, they have coined a new language to address the problematic of climate change, rooted in their everyday struggles. This includes the very term 'environmental justice' which underlines how ethnically marked and low-income communities suffer disproportionately from environmental damage, but also its closely related term 'environmental racism', as well as 'ecological debt', 'popular epidemiology', 'food sovereignty', 'biopiracy' to name just a few[28].

This new vocabulary underscores how environmental justice approaches counter discourses and practices proper to the growth ethos embedded in capitalism's capital intensive and fossil fuel-based, neo-liberal, economic model. By addressing the entropic nature of industrial economies, they underscore the limitations of sustainability doctrines based on the ecological cycles of biological materials or the re-use and recycling of discarded materials. In so doing, they introduce into the debate about climate change a multi-varied and plural understanding of how to collectively inhabit our planet[29].

Yet, despite a series of legal victories over the years, environmental justice, civil society's tool to combat climate change, has proven insufficient in the face of capitalism's neo-liberal, production and market logic. In *This Changes Everything: Capitalism vs Climate,* Naomi Klein argues that: «right now, the triumph of market logic, with its ethos of domination and fierce competition, is paralyzing almost all serious efforts to respond to climate change»[30]. For Klein, the collusion between 'Big Business' and 'Big Green' neutralizes both the social and environmental dimensions of sustainable development and the more radical demands for transforming Western models of production and consumption, subordinating them instead to mainstream economic imperatives that evade confronting the industrial metabolism at the root of climate change[31]. This is not to say

26 W. Haas, F. Krausmann, D. Wiedenhofer, *How circular is the Global Economy ? An assessment of material flows, waste production and recycling in the European Union and the World in 2005*, in «Journal of Industrial Ecology», March 2015. See J. Martinez-Alier, L. Temper, D. Del Bene, A. Scheidel, *Is there a global environmental justice movement?*, in «The Journal of Peasant Studies», 43, n. 3, 2016, pp. 731-755. https://doi.org/10.1080/03066150.2016.1141198

27 *Ibidem*.

28 Ivi, p. 738.

29 A. Kothari, A. Salleh, A. Escobar, *et alii* (eds.), *Pluriverse: A Post Development Dictionary*, Tulika Books, New Delhi 2019.

30 N. Klein*, This Changes Everything. Capitalism vs. Climate*, Alfred A. Knops, London 2014, p. 22.

31 Ivi, p. 16.

that environmental justice efforts are inconsequential and should be abandoned: they have raised awareness about climate justice and integrated issues related to environmental justice and social integrity into the climate change debate, adding to and enlarging the scope of sustainable development. Nevertheless, they remain insufficient before the task at hand.

4. *Sustainable development, environmental justice and the expansion of the digital realm*

The digital transition has sparked a growing interest in the development of new forms of digital governance, increasingly extending into the field of climate change[32]. Sustainable development has consistently aimed at balancing environmental stewardship with economic growth. In recent decades, this ambition has extended into the digital realm, where 'green growth' is often presented as a techno-optimistic strategy[33]: the idea that innovation – especially through predictive digital technologies – can deliver environmental solutions without requiring fundamental changes to economic systems or patterns of consumption. This view, however, sits in a deeply contradictory position. While strategies such as lifecycle assessments, circular design, and biomimetic design[34], often assisted by digital technology, promise more efficient, less wasteful ways of producing and consuming, they largely operate within the confines of capitalist growth. Furthermore, as Emilie Verdolini argues, «the digital revolution today is still a largely ungoverned process, a mega-trend that is strongly fueled by market forces and powerful interest groups, as well as consumer preferences for digital services»[35].

Victor Papanek, in *Design for the Real World*, offers a crucial early critique of this tendency[36]. He argues that design cannot be ethically neutral and must resist being a tool for profit maximization when it conflicts with social and environmental wellbeing. Today, this conflict is heightened by our increasing dependence on digital infrastructure – ranging from social networks, streaming platforms and crypto currencies to cloud computing, cloud storage and artificial intelligence – where the very term 'digital technology' encompasses multiple, heterogenous realities. Several authors describe the concentration of digital governance in the hands of a handful of United States' and Chinese tech giants, i.e. the GAFAM and BATX, as a new form of 'techno-feudalism', reinforcing global

32 D. Chandler, *Digital Governance in the Anthropocene: The Rise of the Correlational Machine*, in D. Chandler, C. Fuchs (eds.), *Digital Objects, Digital Subjects: Interdisciplinary Perspectives on Capitalism, Labour and Politics in the Age of Big* Data, University of Westminster Press, London 2019, pp. 23-42.

33 G. Babinet, *Green IA : L'intelligence artificielle au service du Climat*, Odile Jacob, Paris 2024.

34 W. McDonough, M. Braungart, *Cradle to cradle: Remaking the way we make things*, North Point Press, New York 2002. J.M. Benyus, *Biomimicry: Innovation inspired by nature*, William Morrow, New York 1997.

35 E. Verdolini, *Interlinkages between the just ecological transition and the digital transformat*ion, in «European Trade Union Institute», ETUI Working Paper 01, 2023, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4329226 (last access 30-9-2025).

36 V. Papanek, *Design for the Real World: Human Ecology and Social Change*, Pantheon Books, New York 1972.

dependency and limiting democratic oversight[37]. For others, digitalization is «part and parcel of the inherent dynamics of the Great Accelleration», a 'Great Digitalization' that has produced a «digitally orchestrated technosphere» closely tied to the emergence of the Anthropocene[38]. Far from being environmentally neutral, digital technologies impact the environment directly in terms of greenhouse gas emissions, water consumption, and mineral extraction associated with the production, use and end of life of devices, computers, datacenters and network infrastructure, and indirectly via energy exploitation or increases in consumption patterns[39].

This paradox is most visible in the expansion of global data centers – critical infrastructure for the so-called immaterial digital economy. In *A bout de flux,* Fanny Lopez explains how digital and electric infrastructures are enmeshed into a continuum whose complexity obfuscates its material and energetic components[40]. Since the mid-2000s, the proliferation of streaming media, cryptocurrencies, and large-scale AI systems has led to skyrocketing energy consumption. In the United States, these data centers are increasingly straining regional energy infrastructures, much of which are still powered by fossil fuels. The *Washington Post*'s extensive *Power Grab* series of investigations details how this expansion is exacerbating energy and resource demands in ways that are systematically concealed from the public[41].

The digital transformation also perpetuates the myth of technological salvation. AI is frequently heralded as a means to manage and mitigate climate change through predictive modeling, environmental monitoring, or efficiency optimization. However, as Kate Crawford illustrates in *Atlas of AI*, these promises obscure the extractive, exploitative,

37 C. Durand, *Techno-féodalisme : Critique de l'Economie Numérique*, La Découverte, Paris 2020. Y. Varoufakis, *Technofeudalism: What killed capitalism*, Melville House, London 2024. GAFAM refers to the five largest American technology companies: Google, Apple, Facebook, Amazon and Microsoft. BATX is an acronym for Baidu, Alibaba, Tencent, and Xiaomi, the four biggest technology firms in China.

38 F. Creutzig *et alii*, *Digitalization and the Anthropocene*, cit., p. 484. E. Bonnet, D. Landivar, A. Monnin, *Héritage et fermeture: Une écologie du démantèlement*, Éditions Divergences, Paris 2021, p 94.

39 F. Creutzig *et alii*, *Digitalization and the Anthropocene*, cit., p. 489.

40 F. Lopez, *A bout des flux*, Éditions divergences, Paris 2022, p. 12.

41 E. Halper, *Amid explosive demand, America is running out of power*, in «The Washington Post», March 3, 2024. https://www.washingtonpost.com/business/2024/03/07/ai-data-centers-power/; E. Halper, *A utility promised to stop burning coal. Then Google and Meta came to town*, in «The Washington Post», December 10, 2024. https://www.washingtonpost.com/business/2024/10/08/google-meta-omaha-data-centers/; E. Halper, L. Rein, *Three Mile Island owner seeks taxpayer backing for Microsoft AI deal*, in «The Washington Post», October 3, 2024. https://www.washingtonpost.com/business/2024/10/03/nuclear-microsoft-ai-constellation/; A. Olivo, *Internet data centers are fueling drive to old power source: Coal*, in «The Washington Post», April 17, 2024. https://www.washingtonpost.com/business/interactive/2024/data-centers-internet-power-source-coal/; A. Olivo, W. Neff, *Our digital lives need massive data centers. What goes on inside them?* in «The Washington Post», September 17, 2024. https://www.washingtonpost.com/dc-md-va/interactive/2024/data-centers-tour-northern-virginia/; P. Verma, *In the shadows of Arizona's data center boom, thousands live without power*, in «The Washington Post», December 23, 2024. https://www.washingtonpost.com/technology/2024/12/23/arizona-data-centers-navajo-power-aps-srp/; P. Verma, S. Tan, *A bottle of water per email: The hidden environmental costs of using AI chatbots*, in «The Washington Post», September 28, 2024. https://www.washingtonpost.com/technology/2024/09/18/energy-ai-use-electricity-water-data-centers/ (last access 30-9-2025).

and energy-intensive realities of AI's full lifecycle – from rare-earth mineral mining and data harvesting to carbon-heavy model training[42]. In Crawford's view, AI is not just a technical tool, but a political instrument embedded within and shaped by geopolitical, labor, and environmental inequalities.

Moreover, the supposed novelty of AI-driven solutions is largely illusory. Predictive models operate within a 'predefined realm of possibilities', often reinforcing existing social and environmental structures rather than transforming them. This limitation is particularly evident in climate science. As Paul N. Edwards shows in *A Vast Machine*, contemporary climate knowledge is built upon complex computational infrastructures that gather, aggregate, and model vast quantities of global data[43]. These models are invaluable for understanding climate change but cannot by themselves drive political or economic transformation. At best, they help us predict catastrophe; at worst, they serve to simulate concern while deferring meaningful action.

As such, technological innovation – particularly in the digital realm – can feel akin to 'rearranging deck chairs on the Titanic'. While digital models may project the submergence of low-lying nations with precision, they offer little recourse to those communities unless broader economic and political paradigms are challenged. In the end, the optimism of green growth relies on a sleight of hand: it repackages consumption and expansion as sustainability, ignoring the hidden costs and externalities embedded in the infrastructures it promotes. Digital governance is more a mirage than an equitable response to climate change.

5. *For a new governance: an environmental, decolonial praxis*

As Latour reminds us, the issue at stake is one of governance[44]. While a detailed account of Latour's broader philosophical framework lies beyond the scope of this essay, what is most relevant here is his call to fundamentally rethink our understanding of – and relationship to – 'nature' by becoming 'earthbound' in the process[45]. This shift entails approaching the planet from a new vantage point, one that redirects our attention from the abstract notion of 'nature' to the concrete reality of the 'Earth', thereby prioritizing systems of 'generation' over systems of 'production'[46].

Latour states, in *Où Atterir ?,* that the dominant 'system of production' that underpins Western industrial models is based on «a specific conception of nature, materialism, and the role of science»[47]. By contrast, the 'system of generation' he proposes involves engaging with:

42 K. Crawford, *Atlas of AI: Power, politics, and the planetary costs of artificial intelligence*, Yale University Press, London 2021.
43 P. N. Edwards, *A vast machine: Computer models, climate data, and the politics of global warming*, MIT Press, Cambridge 2010, https://doi.org/10.1111/cag.12157Academia.
44 B. Latour, *Face à Gaïa*, cit., p. 80.
45 Ivi, p. 274.
46 B. Latour, *Où Atterrir? Comment S'Orienter en Politique*, La Découverte, Paris 2017, p. 104.
47 Ivi, p. 105.

> a multiplicity of agents, actors, and animate beings, each endowed with distinct capacities for response. This system is grounded in a different material ontology, departs from dominant epistemological frameworks, and leads to fundamentally different policies. It does not aim to extract resources for human use, but to foster the flourishing of *earthbound beings* – all earthbound beings, not just humans.[48]

To think and act within a generative rather than productive paradigm requires a profound epistemological shift. Within this framework, Latour argues that becoming earthbound entails developing new modes of governance capable of engaging with the complex, relational entanglements of multispecies actors implicated in climate change. Admittedly, this is easier said than done.

Latour's generative paradigm seems closely related to recent decolonial, locally driven responses to climate change. Kothari et al., for example, advocate for a 'post-development' world where democracy addresses all 'domains of life' in a continuously 'radicalized' process: their *Post-Development Dictionary* reads as a manual for environmental, economic and social justice that integrates the relational entanglements called forth in Latour's multispecies approach[49].

As such, it integrates experiences emerging from environmental justice movements that rethink agency, interdependence and responsibility. Arturo Escobar, in *Designs for the Pluriverse*, similarly echoes concerns for environmental justice mentioned above, but clearly situates them in a decolonial, post-developmental approach that runs counter to mainstream capitalist, neo-liberal, economic doctrine[50]. Escobar looks at design as a fundamentally liberating and transformative practice that can help communities reclaim their everyday life by reconfiguring their social, ecological and production systems. To do so, however, this demands a radically different understanding of who we are, what we know and what we do, similar to the epistemological shift advocated by Latour. This is a way off from the sustainable development paradigm developed in the 1980s and takes environmental justice to a new level, one where justice is not only a human right but is relationally shared by all earthbound beings[51].

Resistance to unsustainable production processes[52]; the promotion of just, equitable, participative and more inclusive ways of being and doing; and the forging of new institutional relationships with the natural world that characterize environmental justice's latest incarnation[53] are all constitutive elements of what defines a 'new climate regime'.

48 Ivi, p. 106.
49 A. Kothari, A. Salleh, A. Escobar, *et alii* (eds.), *Pluriverse: A Post Development Dictionary*, cit., p. 25.
50 A. Escobar, *Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds*, Duke University Press, Durham 2018, https://doi.org/10.1215/9780822371816Duke University Press+2ResearchGate+2Duke University Press+2 (last access 30-9-2025).
51 This echoes Schlosberg's argument that: «In its latest incarnation, environmental justice is now also about the material relationships between human disadvantage and vulnerability and the condition of the environment and natural world in which that experience is immersed. Like all iterations of environmental justice over the years, this focus has much to offer communities – both human and non-human». D. Schlosberg, *Theorising environmental justice: the expanding sphere of a discourse*, cit., p. 51.
52 J. Hickel, *Less is more: How degrowth will save the world*, Penguin Random House, London 2020.
53 D. Schlosberg, *Theorising environmental justice: the expanding sphere of a discourse*, cit., p. 49.

6. *Conclusion: Beyond the Illusions of Green Growth and Towards a More Equitable Model*

The ideal of green growth is seductive – it suggests we can reconcile economic expansion with climate responsibility through technological ingenuity. Yet this promise is built on a profound misconception: that the very systems responsible for ecological breakdown can be retooled to avert it, without transforming their underlying logic. That the ultimate challenge is more information or 'vision', rather than informational interpretation, collective decision-making, and taking corrective actions. This plays to Mark Fisher's statement in *Capitalist Realism*, that there is a «widespread sense that not only is capitalism the only viable political and economic system, but also that it is now impossible even to imagine a coherent alternative to it»[54].

Digital infrastructures – from AI to data centers – are not merely tools but products of a neoliberal paradigm rooted in extractivism, inequality, and ecological denial. As Kate Crawford and others have shown, the apparent immateriality of digital solutions conceals immense energy consumption, exploitative labor, and planetary-scale material flows. These systems don't escape the problem; they embody it.

This critique gains urgency amid the resurgence of authoritarian regimes that frame environmental regulation as a threat to economic sovereignty. As seen in policy shifts across the globe – from Trump to Milei – environmental rollback is now central to a broader assault on social and ecological protections. This reveals an uncomfortable truth: climate justice is inseparable from economic justice, and neither can be achieved within a model that prioritizes endless growth.

If we are to chart a viable path forward, we must embrace alternatives that confront the roots of our planetary crisis. Degrowth, post-development, and pluriversal design do not aim to optimize capitalism – they aim to move beyond it. As Arturo Escobar argues, we must reimagine design as a practice of relationality, rooted in autonomy, interdependence, and the ontological diversity of ways of being in the world[55]. Likewise, Bruno Latour reminds us that the Earth is not a backdrop to human action but an active, entangled agent within a 'critical zone' that demands new modes of governance and inhabitation[56]. These perspectives invite us to shift from a model of production and mastery to one of generation, reciprocity, and responsibility.

The question, then, is no longer whether such alternatives are possible. The question is whether we will find the political and ethical consensus necessary to enact them, before the momentum of catastrophic inertia forecloses the very future they seek to preserve.

54 M. Fischer, *Capitalist Realism*, Winchester, London 2009, p. 2.
55 A. Escobar, *Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds*, cit.
56 B. Latour, *Face à Gaïa*, cit.