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Beyond the frontiers of political science: Is good governance possible in cataclysmic times?

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Beyond the frontiers of political science: Is good governance possible in cataclysmic times? 2nd Edition

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Editorial: Beyond the frontiers of political science: is good governance possible in cataclysmic times?

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Editorial on the Research Topic
Beyond the frontiers of political science: is good governance possible in cataclysmic times?

Introduction

This volume acknowledges the interdisciplinary nature of the climate crisis and aims to transcend the traditional boundaries of political science. By incorporating insights from various disciplines, the book seeks to provide a comprehensive and holistic understanding of the challenges at hand.

The interconnectedness of global existential crises, such as climate change, require a multifaceted approach, involving scientific, social, economic, ethical, and technological dimensions. By embracing interdisciplinarity, the book seeks to leverage diverse perspectives and expertise to explore innovative answers and policy approaches.

Interdisciplinarity allows for the integration of knowledge from different fields, fostering a more comprehensive understanding of "super wicked" problems such as climate change (Lazarus, 2008). It suggests that researchers and practitioners should consider a broader range of factors than they usually do, including scientific data, societal impacts, political dynamics, cultural values, and technological possibilities. This broader perspective enhances the capacity to develop effective governance strategies and policies that account for the interconnectedness of various angles of the problem.

The goal is to use a holistic approach departing from conventional methods of governance as the complex and interrelated events, phenomena, and resulting problems defy the limitations of disciplinary boundaries. To make progress and effectively address these challenges, political scientists must tap into and seek aid from the larger breadth of human knowledge while exploring uncharted territories and envisioning novel scenarios and institutional frameworks.

In summary, at the core of this Research Topic lies the belief that political scientists alone cannot adequately tackle the governance challenges brought forth by the climate crisis and other transnational issues. Given the challenge of complexity, interdisciplinarity has become an essential prerequisite, a *sine qua non* for the advancement of the natural sciences and for that of political science, as well as of political action itself. We can note how the geological

concept of the Anthropocene managed to move from the natural sciences to the social and human sciences, where it led to the proliferation of passionate debates, meetings, and new concepts (Wabnitz et al., 2020; White, 2020; Conversi, 2021a,b, 2022; Killian, 2021; Zalasiewicz et al., 2021; Eriksen, 2022). Meanwhile, interdisciplinarity is already a central aspect of the reports drawn up by the main international organizations dedicated to understanding the impact of climate change, with the participation of a growing number of social scientists (IPCC, 2021, 2022).

Many Earth scientists have launched calls to overcome the rapidly increasing lack of integration of existing scientific data (Cuhra, 2019; Ripple et al., 2019). Despite the IPCC's efforts, a flood of information that could be of vital importance for political choices and the orientation of citizens remains relegated to specialist areas that prevent its diffusion. In particular, it has been observed that "Today's distributed corpus of human intelligence, including the scientific publication system, cannot be exploited with the efficiency needed to meet current evidence synthesis challenges" (Balbi et al., 2022).

The problem is amplified when we move from the natural to the social sciences. The latter and the humanities even more so seem to have become belatedly aware of developments in the science of climate change. In the absence of a common language and of a "shared semantics" between the various scientific disciplines, the social sciences have been particularly hesitant, reluctant, and slow to incorporate new data that have emerged in other disciplinary areas, especially if these data do not corroborate previous narratives and their footsteps do not resonate on well-trodden paths. This resistance increases all the more as the new data appear too "pessimistic" to be included within the predominant discourses. As we will see, the division of the world into nation-states plays a central role here, and the paths of national identities and everyday nationalism appear more comfortable in the persistent inability to discuss climate phenomena in contexts of everyday life.

The social sciences are, however, at least one step behind the exact sciences: they are often reactive, rather than proactive, with regard to most scientific discoveries, as often with the emergence of new technologies. Despite the rare intuitive ability of some scholars, they have remained behind for a long time in dealing with the social reverberations of complex phenomena such as the ecological crisis. Known exceptions include the interdisciplinary area of environmental humanities.

Yet in other areas, substantial difficulties remain in incorporating the latest scientific knowledge, in particular the rapid and changing advances in the sciences of climate change and the Earth System.

The very asking of many questions was late in almost all the social sciences, with the possible exception of anthropology, an ontological and epistemological paradox considering the *anthropos* shared by ≪anthropology≫ and ≪Anthropocene≫.

The "denigratory campaign" launched against scientists who had dared to question the limits of development (Meadows et al., 1972, 2018) could not fail to backfire on anthropology as on all other social sciences.

Among the few social scientists who have been engaged for years in incorporating new scientific knowledge, Latour (2015) criticizes academic conservatism enclosed by insurmountable walls and locked within disciplinary circles with occasional and scarce scientific footholds. Latour (2017a,b) prefers to consider the greater flexibility of some disciplines, especially social and cultural anthropology, compared to other social sciences that are more static and closed to novelties.

In the historical sphere, the ≪four theses on the Anthropocene≫ proposed by Chakrabarty (2009) to conceptualize the ≪deep confusion≫ that the alteration of the planet has produced in life history have imprinted a trajectory that goes far beyond the historical discipline. For Chakrabarty, we are falling toward a sense of the present, where the future is now disconnected from the past. Past, present, and future can no longer be perceived as a sequence and along a sense of continuity. Subsequently, in a book that expands the "four theses" approach, Chakrabarty (2018) criticizes the limits of traditional history, catalyzing multidisciplinary reflections on ontology, freedom, and justice inside and outside of the social sciences, the natural sciences, and the applied professions: going beyond history, philosophy, cultural and postcolonial studies, one necessarily comes to include geoscientists and bioscientists. According to Chakrabarty, climate change collapses the distinction between natural history and human history, and we are thus destined to abandon the specialized way of thinking with which we have identified since the Enlightenment.

According to provisional data, the victims of climate change are already in the millions, distributed across various regions of the planet but often concentrated in specific areas (Romanello et al., 2021): research published in *The Lancet* indicates that climatic event extremes have appeared in regions stable until a few years before, while anomalous temperatures (too high or too low) linked to the climate crisis are responsible for 5 million deaths a year (Zhao et al., 2021). We can well-understand how these numbers are set to increase rapidly and, in some places, exponentially as climate change-related crises expand. Inevitably, as a corollary, an increasing number of conflicts, wars, poverty, and famines have been linked to the consequences of climate change, as in Sudan, Syria, Somalia, and other countries and regions (Ide and Scheffran, 2014; Ide et al., 2014; Schilling et al., 2020).

This volume is not the first attempt to bring together various disciplines to tackle the multiple crises, particularly climate change (Bhaskar, 2010; Frodeman, 2013). However, it is the first to raise these existential questions, which have a primarily political focus and hence demand a new political imagination. The editors took up the challenge and embraced interdisciplinarity, leveraging the knowledge of anthropologists, political scientists, sociologists, geographers, physicists, philosophers, and mathematicians. Together, they contributed to a comprehensive understanding of how multifaceted our global challenges are in order to inform decision-making in governance.

Scheffran has contributed by delving into the geopolitics of the Anthropocene. He considers alternative futures spanning from the collapse of human civilization to geopolitical power struggles, conflicts, technological innovations, and changes in systems within ecological limits. Scheffran connects geopolitical conflicts such as the recent Russia–Ukraine conflict with climate change, as has been done by other authors (Zuk and Zuk, 2022). The link is that climate change requires cooperative governance efforts for mitigating,

adapting to, and managing the complex crisis landscapes emerging in the Anthropocene, which conflict makes impossible. Peace is needed to facilitate the energy transition at the core of climate change resolutions. For Scheffran, only peace can offer cooperative governance to address the world's complexity and transition from a negative nexus of problems to a positive nexus of solutions. Hence, the goal is to work to prevent the escalation of crisis dynamics and geopolitical conflicts.

Within the energy–security nexus, Scheffran highlights the importance of strategies that mitigate land competition, biodiversity loss, and risky dependencies on strategic raw materials and conflict minerals. Sustainable energy transition measures such as energy efficiency, conservation, renewable energy adoption, decarbonization, circular economy practices, and nature-based solutions are identified as key elements for addressing conflicts, especially energy conflicts (Zuk and Zuk, 2022). He focuses on the climate–conflict–migration nexus and sees synergistic approaches in climate, migration, and security policies as fundamental factors to build socio-political environments where available solutions can be applied. These aim to mutually reinforce sustainability and peace while preventing the multiplication of risks within the nexus.

Eriksen's contribution approaches governance by highlighting the need to broaden the definition of politics vis-à-vis the inability of the state to contribute to viable solutions to multiple crises, particularly the twin losses of biodiversity and cultural diversity. In fact, Eriksen argues that politics is part of the problem. He states: "since the reduction of diversity is caused by governments and corporate interests, it is necessary to look elsewhere for resistance movements". He looks especially at political actions and projects engaged in by activists, NGOs, and citizens that seek political change. At the same time, Eriksen does not exclude the positive outcome of international agreements but remains skeptical about the implementation of their resolutions as they are hardly, if ever, followed by effective action.

If Scheffran looks at conflicts, which are often seen as a major obstacle, Eriksen emphasizes the impact of economic upscaling, homogenization, globalization, the flattening of ecosystems, and the increasing power of corporations as the primary culprits for the climate crisis. In this chapter, Eriksen suggests that the solution lies in decelerating, cooling down, or scaling down these processes. He suggests that the COVID-19 lockdown period in Seychelles offered a clear illustration of the consequences of dependency on imported goods. Planes reduced their flights to essential cargo, and certain fresh vegetables that were flown in daily became scarce. People adapted and planted their own food, even in urban settings such as flats, and focused on traditional Creole foodstuffs such as plantains, dessert bananas, yams, sweet potatoes, and tomatoes. For the sake of clarity, Eriksen's argument extends beyond these practical adaptations during the pandemic. He asserts that any attempts to restore some of the lost diversity in ecosystems and food systems inherently involve an element of *downscaling*. This implies moving away from the large-scale, homogenized systems dominated by corporations and instead embracing smaller-scale, diverse approaches.

By highlighting the need to decelerate and scale down, Eriksen emphasizes the importance of reevaluating and reconfiguring our economic and ecological systems to prioritize sustainability, resilience, and local self-sufficiency. This approach challenges the prevailing paradigms of relentless growth and globalized systems, suggesting that a more localized, diverse, and balanced approach is necessary for achieving peaceful cooperation and effective climate resolutions.

We note that, as recently observed in *The Lancet*, "environmental degradation can reduce self-identification with nature, leading to decreased pro-environmental behaviors and decreased cooperation with out-groups, further increasing the likelihood of transgressing planetary boundaries" (Oliver et al., 2022).

Two further chapters tackle the problem of governance raised by Eriksen and partly also by Scheffran. Conversi and Posocco ask whether nationalism is at the core of conflicts, lack of coordination and cooperation, homogenization, and other problems linked to climate change that were raised in the previous chapters. They also ask whether the nation-state system is compatible with the struggle to halt or minimize climate change and related environmental catastrophes and whether other form(s) of government, informed or not informed by nationalist ideology, could better address climate change.

The authors state that nationalism, in particular *resource nationalism* (RN) and its connection to the corporate world, is a major problem at the core of the climate crisis as it makes nation-states uncooperative, resistant to coordination, and more worried about domestic agendas than global issues. However, instead of dismissing nationalism and the nation-state completely, as if they could entirely be replaced overnight, they explore specific national scenarios that stand out in sustainability achievement. They might serve as potential "examples" of increased sustainability. Multilevel experiences that have emerged in Norway, Denmark, Sweden, Switzerland, and Germany are seen as potentially viable and greener alternatives to the classical obstructionist nation-statism entrenched in resource nationalism that has often prevailed during international climate negotiations. In their perspective, examples of climate perpetrators are nationally based corporations entrenched in power-holding, hegemonic, or leading positions, such as in the USA, or in countries whose regimes are more obsessed with attaining the "status" of developed countries than tackling the climate crisis, such as China, India, or Brazil under Bolsonaro (Diele-Viegas et al., 2021; Iamamoto et al., 2021; Silva Junior et al., 2021). However, the crucial goals of the complete phasing out of fossil fuels and the implementation of a circular economy are absent from the prevailing policies of both the greener nation-states and the top polluters.

In the chapter on *Reflexive Green Nationalism* (RGN), Posocco and Watson take this subject further and look at greener nation-states, asking what makes them more successful than others in cutting their CO2 emissions, which is the main problem behind global warming. They point to reflexivity and reflexive modernity, two concepts first theorized by Beck et al. (1994) as major contributors. They define reflexivity as the capacity for self-criticism, the ability to recognize the problems or side effects of modernity and implement strategies that make communities and states greener and less disruptive to the national and global environment. They then delve into understanding the factors that prevent nation-states from

adopting a more reflexive strategy and explore potential triggers for reflexivity.

By means of case studies, the authors suggest that knowledge created through reflexivity is more often than not directed toward the nation-state to improve national standards rather than targeting the global community. As the nation-state is so prominent and pervasive, it is not surprising that reflexivity is influenced by dynamics internal to it. They also identify various elements that can trigger reflexivity, including civil society, critical elites, traditional and social media, influencers, environmental NGOs, subcultures, indigenous minorities, the public sphere, and youth movements (e.g., Greta Thunberg's Fridays for Future or Extinction Rebellion). The authors explore the case of NGOs and their potential to trigger change at the governmental level while highlighting some reasons why this institution is not as effective as it was during the first environmental turn in the 1960s and 1970s. They also address secondary problems that arise from attempts at resolutions, aligning with Lazarus' hypothesis that climate change is a wicked problem, one that defies resolution due to the enormous interdependencies, uncertainties, circularities, and conflicting stakeholders involved in any effort to develop a solution (Lazarus, 2008, p. 1159).

Hau's chapter fits into the discourse of local vs. national and global governance and its connections to nationalism and the nation-state. He examines minority nationalist political actors who actively seek to link environmental issues to autonomy in Scotland, Catalonia, and Corsica. Hau observes how issues of autonomy in the UK, France, and Spain have become linked to environmentalism. These minority groups claim that with greater autonomy, they would pursue more ambitious green policies for the environment. For Hau, this serves as proof that nationalism is not only an obstacle but can potentially be the foundation for climate action, espousing the idea of "green nationalism" already present in the aforementioned chapters (Conversi and Posocco; Posocco and Watson).

Connecting the climate crisis to the COVID-19 pandemic, Bohle and Marone's chapter examines how experiences from past crises can inform societal responses to future challenges. Their chapter delves deeply into the matter of governance, focusing on the governance of adaptation to complex adaptive dynamics such as those emerging from the COVID-19 pandemic and the climate crisis.

Mazon et al. ask whether declaring a climate emergency is sufficient to halt global heating, and like Bohle and Marone, they too draw lessons from COVID-19. Their answer to the question is largely negative (Mazon et al.). They analyze, however, the possibility of a global climate alarm declaration as an international legal tool and present a template for stopping emissions and achieving the objectives of the 2015 Paris Agreement. While they acknowledge that their proposal is not without controversy, their point is that without a radical change of course, supported by legal tools similar to those activated during the COVID-19 pandemic, the world will not achieve the desired results in terms of CO2 reduction.

Finally, Hammy and Miley look at Rojava, a territory in northern Syria that Kurds consider an integral part of a politically non-existing Kurdistan, for inspiration. This territory has undergone significant transformation since Kurdish revolutionary forces took control in 2012, attempting to build a radically egalitarian, ecological society inspired by the ideas of Öcalan and Holloway (2020), Bookchin (2005). Their chapter provides a general background of the geopolitical scenario, an overview of the theories advanced by Öcalan and Holloway (2020), Bookchin (2005) outlining the requirements and outputs of an ecological society, and a thorough analysis of the Rojava case study to extract lessons. They highlight three important lessons: (1) the lesson of revolutionary hegemony, (2) the lesson of economic democratization challenges, and (3) the lesson of autonomy and geopolitical constraints. The first lesson explores how the installment of a new government in Rojava by paramilitary authorities led to a top-down, militaristic, and partisan approach that influenced the construction and consolidation of popular assemblies, deviating from the intended bottom-up direct democratic governance. The second lesson emphasizes the difficulty of advancing economic democratization and ecology during war, as oil became a fundamental resource and a source of revenue for the revolutionary authorities, causing ecological and democratic plans to take a backseat. The third lesson emerges from the hostile geopolitical context that hampers ecological endeavors. The addiction to oil by powerful imperialist nation-states, with whom Rojava collaborated, made the dream of ecology and democracy impossible.

In all, this volume brings together a host of disciplines, exploring the current global climate predicament and associated crises from a variety of theoretical angles areas that have not been brought together before. Many of the articles have placed this polycrisis firmly within the institutional precinct of the nation-state and its founding ideology, nationalism. All point to the urgency of finding a multiplicity of political solutions to the gravest global crisis in human history. As all authors agree, it is a crisis that can only spin out of control if we continue pursuing the current head-in-the-sand ecopolitical model. Moreover, if no immediate action is simultaneously taken at the individual, local, national, and global levels, this model is well on the path to rendering large parts of the world *unliveable* for people in *all* countries.

Author contributions

LP: Conceptualization, Writing—original draft. DC: Conceptualization, Supervision, Writing—review and editing. IW: Conceptualization, Supervision, Writing—review and editing.

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References

Balbi, S., Bagstad, K. J., Magrach, A., Sanz, M. J., Aguilar-Amuchastegui, N., Giupponi, C., et al. (2022). The global environmental agenda urgently needs a semantic web of knowledge. *Environ. Evid.* 11, 5. doi: 10.1186/s13750-022-00258-y

Beck, U., Giddens, A., and Lash, S. (1994). *Reflexive Modernization, Politics, Tradition and Aesthetics in the Modern Social Order*. Stanford, CA: Stanford University Press.

Bhaskar, R. (ed.) (2010). *Interdisciplinarity and Climate Change.Transforming Knowledge and Practice for Our Global Future*. London: Taylor and Francis.

Bookchin, M. (2005). *The Ecology of Freedom. The Emergence and Dissolution of Hierarchy*. Oakland, CA: AK Press.

Chakrabarty, D. (2009). The climate of history: four theses. *Crit. Inq.* 35, 197–222. doi: 10.1086/596640

Chakrabarty, D. (2018). *The Crises of Civilization*. Exploring Global and Planetary Histories. Oxford: Oxford University Press.

Conversi, D. (2021a). Exemplary ethical communities. A new concept for a livable anthropocene. *Sustainability* 13, 5582. doi: 10.3390/su13105582

Conversi, D. (2021b). "Geoethics versus geopolitics," in *Shoring up the Nation in the Anthropocene Cul-de-sacm, Geo-societal Narratives: Contextualising Geosciences*, eds M. Bohle and E. Marone (Cham: Springer), 135–152.

Conversi, D. (2022). "Economic nationalism in the anthropocene," in *Handbook of Economic Nationalism*, ed A. Pickel (Cheltenham: Elgar Publishers), 29–44.

Cuhra, M. (2019). The scientist: creator and destroyer—"Scientists' warning to humanity" is a wake-up call for researchers. *Challenges* 10, 33. doi: 10.3390/challe10020033

Diele-Viegas, L. M., Hipólito, J., and Ferrante, L. (2021). Scientific denialism threatens Brazil. *Science* 374, 948–949. doi: 10.1126/science.abm9933

Eriksen, T. H. (2022). The sustainability of an anthropology of the anthropocene. *Sustainability* 14, 3674. doi: 10.3390/su14063674

Frodeman, R. (2013). *Sustainable Knowledge: A Theory of Interdisciplinarity*. New York, NY: Springer.

Iamamoto, S. A., Mano, M. K., and Summa, R. (2021). Brazilian far-right neoliberal nationalism: family, anti-communism and the myth of racial democracy. *Globalizations* 20:1–17. doi: 10.1080/14747731.2021.1991745

Ide, T., and Scheffran, J. (2014). On climate, conflict and cumulation: suggestions for integrative cumulation of knowledge in the research on climate change and violent conflict. *Global Change Peace Sec.* 26, 263–279. doi: 10.1080/14781158.2014.924917

Ide, T., Schilling, J., Link, J. S., Scheffran, J., Ngaruiya, G., and Weinzierl, T. (2014). On exposure, vulnerability and violence: Spatial distribution of risk factors for climate change and violent conflict across Kenya and Uganda. *Polit. Geogr.* 43, 68–81. doi: 10.1016/j.polgeo.2014.10.007

IPCC (2021). *Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press, 3–32. Available online at: https://www.cambridge.org/ipcc (accessed September 11, 2023).

IPCC (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability (Contribution to the IPCC Sixth Assessment Report-IPCC Working Group II)*. Geneva: The Intergovernmental Panel on Climate Change.

Killian, K. D. (2021). Welcome to the anthropocene: Gregory Bateson, disaster porn, Swamp Thing, and 'The Green'. *Globalizations* 18, 1017–1032. doi: 10.1080/14747731.2020.1859761

Latour, B. (2015). *Science in Action. How to Follow Scientists and Engineers through Society*. Cambridge, MA: Harvard University Press.x

Latour, B. (2017a). "Anthropology at the time of the Anthropocene: a personal view of what is to be studied," in *The Anthropology of Sustainability. Beyond Development and Progress*, eds M. Brightman and J. Lewis (Cham: Springer), 35–49.

Latour, B. (2017b). *Facing Gaia: Eight Lectures on the New Climatic Regime*. Oxford: John Wiley and Sons.

Lazarus, R. J. (2008). Super wicked problems and climate change: restraining the present to liberate the future. *Cornell L. Rev.* 94, 1153.

Meadows, D. H., Meadows, D. L., Randers, J., and Behrens W. W. (1972) *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*. New Yor, NY: Universe Books/A Potomac Associates book [I limiti dello sviluppo: rapporto del System Dynamics Group Massachusetts Institute of Technology (MIT) per il progetto Club di Roma sui dilemmi dell'umanita'. Edizioni scientifiche tecniche Mondadori 1983].

Meadows, D. H., Meadows, D. L., Randers, J., Behrens W. W., Peccei, A., and Stefes, A. (2018). *I limiti alla crescita: rapporto del System Dynamics Group Massachusetts Institute of Technology (MIT) per il progetto del Club di Roma sulla difficile situazione dell'Umanità*. Massa: Lu.Ce.

Öcalan, A., and Holloway, J. (2020). *Sociology of Freedom, the: Manifesto of the Democratic Civilization, Volume III: 3*. Oakland, CA: Pm Press.

Oliver, T. H., Doherty, B., Dornelles, A., Gilbert, N., Greenwell, M. P., Harrison, L. J., et al. (2022). A safe and just operating space for human identity: a systems perspective. *Lancet Planet Health* 6, e919–e927. doi: 10.1016/S2542-5196(22)00217-0

Ripple, W. J., Wolf, C., Newsome, T. M., Barnard, P., Moomaw, W. R., and Grandcolas, P. (2019). World scientists' warning of a climate emergency. *Bioscience* 70, 8–12. doi: 10.1093/biosci/biz088

Romanello, M., McGushin, A., Di Napoli, C., Drummond, P., Hughes, N., Jamart, L., et al. (2021). The 2021 report of the Lancet Countdown on health and climate change: code red for a healthy future. *Lancet* 398, 1619–1662. doi: 10.1016/S0140-6736(21)01787-6

Schilling, J., Hertig, E., Tramblay, Y., and Scheffran, J. (2020). Climate change vulnerability, water resources and social implications in North Africa. *Reg. Environ. Change* 20, 1–12. doi: 10.1007/s10113-020-01597-7

Silva Junior, C. H., Pessôa, A. C., Carvalho, N. S., Reis, J. B., Anderson, L. O., and Aragão, L. E., et al. (2021). The Brazilian Amazon deforestation rate in 2020 is the greatest of the decade. *Nat. Ecol. Evol.* 5, 144–145. doi: 10.1038/s41559-020-01368-x

Wabnitz, K. J., Gabrysch, S., Guinto, R., Haines, A., Herrmann, M., Howard, C., et al. (2020). A pledge for planetary health to unite health professionals in the Anthropocene. *Lancet* 396, 1471–1473. doi: 10.1016/S0140-6736(20)32039-0

White, R. G. (2020). Mental wellbeing in the Anthropocene: Socio-ecological approaches to capability enhancement. *Transcult. Psychiatry* 57, 44–56. doi: 10.1177/1363461518786559

Zalasiewicz, J., Waters, C. N., Ellis, E. C., Head, M. J., Vidas, D., Steffen, W., et al. (2021). The Anthropocene: comparing its meaning in geology (chronostratigraphy) with conceptual approaches arising in other disciplines. *Earth's Fut.* 9:e2020EF001896. doi: 10.1029/2020EF001896

Zhao, Q., Guo, Y., Ye, T., Gasparrini, A., Tong, S., and Overcenco, A. (2021). Global, regional, and national burden of mortality associated with non-optimal ambient temperatures from 2000 to 2019: a three-stage modelling study. *Lancet Planet Health* 5, e415–e425. doi: 10.1016/S2542-5196(21)00081-4

Zuk, P., and Zuk, P. (2022). National energy security or acceleration of transition? Energy policy after the war in Ukraine. *Joule* 6, 709–712, doi: 10.1016/j.joule.2022.03.009

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The Loss of Diversity in the Anthropocene Biological and Cultural Dimensions

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Theories of nationalism emphasise its standardising effects. Ernest Gellner compared the pre-nationalist world to a painting by Kokoschka (a colour extravaganza) and the world of nationalism as one by Modigliani (calm, monochrome surfaces), while Benedict Anderson showed how the standardisation of language through the medium of printing was a condition for shared national identities. In this article, homogenisation remains a concern, but the empirical framework differs from that of late 20th century theory. Taking its cue from Charles Mann's 1493, a study of the world after Columbus where the term Homogenocene was proposed, the article shows how homogenisation is a key element in modernity, and analyses some implications of its recent acceleration. The effects of economic globalisation are detrimental to both biological and cultural diversity, since the Anthropocene era does not only refer to a reduction of biological diversity but also the incorporation of cultural groups into market economies, the loss of languages and of traditional livelihoods. The article then briefly surveys some responses to the upscaling of economies, the flattening of ecosystems and the growing power of corporations. The loss of flexibility is countered in a number of ways, from attempts to restore damaged ecosystems to groups defending their cultural and political autonomy. The analysis argues for a broad definition of politics (seen as the political), thereby questioning the ability of the state to solve the dilemma, which is a dual one relating simultaneously to cultural and biological loss. The conclusion is that upscaling (e.g., to the global system) is usually part of the problem rather than the solution, and that sideways scaling may address the shortcomings of downscaling (e.g., to the community level).

Keywords: anthropocene, biological diversity, cultural diversity, biosemiotics, anthropology, political activism, homogenocene

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INTRODUCTION

In a world consisting of more than two hundred sovereign states in competitive relationships, shared global challenges are difficult to deal with. Foremost among these are currently climate change and environmental destruction. An urgent question for scholars and policymakers concerns whether solutions are to be found by upscaling or downscaling; should more power be allocated to the United Nations; does the world need more strongly phrased or more binding climate agreements? Or are the proposed large-scale solutions rather part of the problem since they fail to take diversity and local agency into account, and usually come to naught since international treaties on climate have so far scarcely been followed up in practice?

The aim of this article is to address the question how to respond effectively to the collective global challenge of anthropogenic climate change. I will give an account of the present world of overheated global modernity, its origins and some of its characteristics, with an emphasis on homogenisation as a central feature of the modern world. Both cultural and biological homogenisation, or tendencies towards monoculture, are described, and the parallels and differences between the "flattening" of cultural diversity and the impoverishment of ecosystems are shown to be results of imperial expansion and modern capitalism. The outcome will be analysed as a loss of semiotic freedom and flexibility. This dual process, it is subsequently argued, is frequently a result of upscaling, creating a growing gulf between life on the ground and the level of decision-making, as well as unintended consequences leading to global tragedies of the commons. I finally describe briefly some forms of resistance by identifying countermovements attempting to reinstate diversity, both in the realm of culture and in that of ecology. These attempts could come from indigenous groups, but just as easily from concerned middle-class people in the OECD or even startup businesses, but rarely from major corporations or governments. This is why the conceptualisation of politics in the present context has to move beyond institutional politics and look at the way in which political agency works in practice.

The parallels between biological and cultural diversity should not be exaggerated. The time scales differ enormously. Evolution is driven by "the blind watchmaker" (Dawkins 1986) of natural selection, while cultural differentiation relies on human consciousness and creativity. Yet, a comparison can be fruitful at this historical moment, when the homogenising forces of globalisation threaten and reduce both biological and cultural diversity. We may be witnessing a sixth extinction (Kolbert 2014) in nature, and it is estimated that only ten per cent of the roughly 6,000 languages spoken today are safe from extinction (Crystal 2014). Some estimates suggest that one language loses its last native speaker every 2 weeks.

Both processes have accelerated in the last few decades. Only four per cent of the mammalian biomass on Earth now belongs to wild animals (Elhacham et al., 2020). Seventy per cent of the birds in the world are domesticated, mainly poultry. The reduction of variation and of difference thus seems to apply both in the natural and the sociocultural world, often with similar causes and comparable results.

THE HOMOGENOCENE

Seen with the hindsight afforded by the world of the 21st century, it is a striking fact that influential theories of modernity in the last century rarely included environmental destruction and climate change as major concerns. By contrast, a related feature of the contemporary world has been studied and theorised since the advent of social theory, namely homogenisation and standardisation as central features of modernity. The tendency of the modern state and the capitalist economy to iron out differences and create homogeneity has been necessary both at the political level (the nation-state, emerging in the 19th century, required cultural flattening) and in the world economy (which is increasingly globalised, often following Ricardo's principle of comparative advantage). The urbanisation and increased differentiation of modern societies in the North Atlantic world was already a major concern in late 19th century social theory. For example, Tönnies's distinction between *Gemeinschaft* and *Gesellschaft* ("community" and "society", Tönnies 1963[1889]) identified a shift in the mode of social organisation and value orientation, towards greater individualism and anonymity. Similarly, Durkheim's contrast between mechanical and organic solidarity (Durkheim 1997 [1883] referred to a transition from relatively undifferentiated rural societies to societies with an advanced division of labour, and the perhaps most celebrated of all classic social theorists—Marx and Weber—both wrote copiously on the implications of these radical transformations.

The reduction of cultural diversity as a result of colonialism and its accompanying modernisation was a concern already for early 20th century anthropologists, for example in W. H. R. Rivers (1922) anxiety over the assumed population decline in Melanesia and the "salvage anthropology" promoted in the United States by Franz Boas and his students, who were scrambling to save indigenous cultures from oblivion before they vanished, as they were predicted to do.

More recently, research on nationalism and globalisation has addressed questions of social and cultural homogenisation. Both Gellner (1983) and Anderson (1983) describe a historical moment in which a world of many small differences has been transformed to a world of just a few major ones, with Anderson referring to the standardising effects of print capitalism, Gellner to the implications of the industrial revolution. In a memorable allegory, Gellner compares the modern industrial world to a painting by Modigliani—large, calm, monochrome surfaces—contrasting it with a mainly agrarian world reminiscent of a painting by the expressionist Kokoschka, known for his intense use of colour.

A decade later, Castells (1996) wrote about the emerging global network society, which produces a common language for talking about both similarities and differences owing to intensified contact across borders. This situation was, incidentally, described almost *avant la lettre* by (McLuhan 1994 [1964]), who was nevertheless aware that "the global village" was not a peaceful place, but rather one fraught with friction and conflict of the kind described decades later by Barber (1995) as *Jihad versus McWorld*. Later still, Ritzer (2004) wrote about what he calls *the globalization of nothing*, which refers to generic phenomena with no discernable local provenance, spreading rapidly as a consequence of a flattening global modernity rendering everything comparable to everything else.

Such theoretical perspectives on the present era offer important insights into global cultural homogenisation and its accompanying frictions, but climate and the environment are conspicuously absent in all these analyses. By now, it is nonetheless difficult to speak credibly about the human condition under accelerated globalisation without recognising that environmental destruction and climate change are major

issues and fundamental political challenges. This shift represents nothing less than a watershed: Speaking about international relations, global inequality, nationalism or economic globalisation without mentioning climate or the environment now seems about as dated as talking about development in the 1980s without a gender perspective.

A fifth into the twenty-first century, human domination of Earth is such that the term Anthropocene has become widespread as a general description. Since the onset of the industrial revolution in Europe, human activity and expansion have transformed the planet in unprecedented ways, and change continues to accelerate in a number of domains. This situation represents an escalating problem for all of humanity—indeed for all life on the planet. The challenges for research and theory are enormous, and the Anthropocene moment may well be seen retrospectively as a turning point in the social sciences and humanities (Mathews, 2020).

Ecological and environmental perspectives on politics and the human condition have never been absent, but they have become mainstream in the social sciences and humanities only recently. A reasonable starting-point for the current growth of theoretical and empirical literature on the Anthropocene could be the moment when the term itself was introduced around the turn of the millennium, coined independently by the atmospheric chemist Paul Crutzen and the biologist Eugene Stoermer. Crutzen was also the co-author of a much cited article, with his colleague Will Steffen and the historian John McNeill (Steffen et al., 2007), on social aspects of climate change. McNeill is the author, with Peter McNeill and Engelke (2016), of a book about "the great acceleration" since 1945, describing it mainly as one of human expansion and environmental destruction. In a recent review article, Syvitski et al. (2020) identify 1950 as the take-off point for the new epoch, showing rapid increase both in population and energy consumption from that year onwards. In the last couple of decades, the literature on climate, the environment and the human condition has grown exponentially in the humanities and social sciences. However, few have paid systematic attention to the implications of the dual process of ecological and cultural homogenisation. In one of the few studies which takes on the drive to homogeneity in both domains, Charles Mann (2011) coined the term *The Homogenocene* as a label for the modern world, characterised by unprecedented, and accelerating, flows of people, pests, crops, and forms of political domination. Mann takes a *longue durée* perspective on homogenisation, arguing that the seeds of the current era of monocultures, species extinction and invasion, language death and ubiquitous consumerism were sown at the time of the European conquests, and tellingly, the book introducing the term Homogenocene is titled *1493*.

Global homogenisation has gained pace since its beginning at the start of the Columbian exchange (Crosby 2003 [1972]). China, in important respects culturally quite distinct from the North Atlantic world, is now competing on a par with the latter in the global economy, and Chinese citizens seem to be no less devoted to consumption of manufactured goods than Westerners. Comparability along several axes becomes more feasible than in a past when cultural differences overshadowed the emerging similarities.

ENERGY: THE TRIPLE BIND

This is about politics in the Anthropo- or Homogenocene, and energy is a key factor. Perhaps the most influential interdisciplinary writer on energy is Václav Smil (Smil 2017), who takes a historical, comparative and contemporary view on energy. His analysis of energy transitions, especially of the shift from muscle power to machinery, makes it possible to understand why megacities have become possible in the present era, since the size of pre-modern cities was limited by the supply of energy, which had to be produced by people and beasts of burden. Energy is also a key factor in the loss of flexibility characterising our era. A society committed to high energy use can only with great difficulty, and with painful sacrifices, return to a low-energy society. Like language, money and mechanical time, energy renders societies comparable by producing a shared set of parameters for evaluating them (these days both in terms of development/affluence and in terms of ecological sustainability). A focus on energy also indicates the difficulties of Anthropocene challenges. As shown by many scholars, most recently Vogel et al. (2021), the correlation between energy use and life satisfaction is clear if not unanimous. There can be no easy transition from a high-energy society to a sustainable one, especially in light of the rapid global population growth of the last two centuries (Wilhite 2016; Hoff, Gausset, and Lex 2019).

The archaeologist Joseph Tainter has analysed the causes of civilizational collapse in the past (Tainter 1988, Tainter 2014), a perspective subsequently popularised by Jared Diamond (2005). Tainter indicates ways in which contemporary societies can learn from archaeological research when faced with urgent or simmering crises. In his comments on the present, which draw heavily on the collapse of the Roman and Maya empires, environmental destruction comes across as just one factor in accounting for the decline of complex societies. In his view, the decisive cause consists in decreased marginal returns on investments in energy (EROI), owing to population growth and subsequent intensification of food production with decreasing returns, coupled with growth in bureaucratic, logistic and transport costs. Since the late 18th century, we have been able to exploit enormous amounts of energy, at first just in the shape of abundant and easily accessible coal deposits, subsequently through the exploitation of oil and gas for the betterment of humanity. The fossil fuel revolution enabled us to support a fast growing global population with seemingly insatiable desires for consumption. Yet the cost of taking out fossil fuels increases as the low-hanging fruit is being depleted. At the same time, production relying on fossil fuels is tantamount to destruction (Hornborg 2019), in a dual sense, since we are simultaneously eating up capital which it has taken the planet millions of years to produce, *and* are undermining the conditions for our own civilization by altering the climate and ruining the environment on which we rely. We are entangled in a *triple bind*, a wicked trilemma where sustainability, growth and reliance on fossil fuels cannot be reconciled: only one of the three is possible (see Bateson et al., 1956 on the double bind).

Coal and its close relatives oil and gas, the salvation of humanity for two centuries, are now becoming our

damnation, and there is no easy way out. The lesson from cultural history may nevertheless be that lean societies, decentralised and flexible, with less bureaucracy than farming, fewer PR people than fishermen, are the most sustainable in the long term, and to this possibility I shall return. As Tainter remarks: "Complex societies . . . are recent in human history. Collapse then is not a fall to some primordial chaos, but a return to the normal human condition of lower complexity" (Tainter 1988: 198). This is an insight with potential implications for a politics of the Anthropocene.

OVERHEATING AS A CONDITION FOR THE HOMOGENOCENE

A further elaboration of Anthropocene effects may apply the concept of *overheating* in order to interrogate the *acceleration of acceleration* since the end of the Cold War and the coming of the Internet and mobile telephony, around 1990, where changes in a number of interrelated domains have taken off at ever increasing speed—from urban growth in the Global South and international trade to mining and international travel (Eriksen 2016; Erisken 2018).

The current human population of nearly eight billion (compared to one billion in 1800 and just two billion as late as 1920) travels, produces, consumes, innovates, communicates, fights and reproduces in a multitude of ways, and we are increasingly aware of each other as we do so. The steady acceleration of communication and transportation in the last two centuries has facilitated contact and made isolation difficult, and is weaving the growing global population ever closer together, affecting cultural differences, local identities and power relations. Indeed, as decades of research on collective identification has shown, intensified identity management and the assertion of group boundaries is a likely outcome of increased contact and perceived threats to group integrity. A general formula is that the more similar we become, the more different we try to be, although it could be added that the more different we try to be, the more similar we become, since there is a shared global grammar for the effective expression of uniqueness. The standardization of identity currently witnessed in nationalism and religious revivalism is a feature of modernity, not of tradition, although it tends to be dressed in traditional garb. Tradition is traditional, but traditionalism is modern.

Ranging from foreign direct investments and the number of internet connections to global energy use, urbanisation in the global south and increased migration rates, rapid transformations impact social life in many ways, and have in some respects visibly stepped up their pace since the 1990s. Dramatic alterations to the environment, economic transformations and social rearrangements are the order of the day in so many parts of the world, and in so many areas, that it may not be hyperbole to speak of the global situation as being overheated.

Overheating does not merely designate climate change. In physics, heat is simply a synonym for speed, and translated into the language of social science, overheating can refer to fast change. The changes brought about by modernity have unintended, often paradoxical consequences, and when changes accelerate, so do the unintentional side-effects of changes. The term overheating calls attention to both accelerated change and the tensions, conflicts and frictions it engenders, as well as—implicitly—signalling the need to examine, through dialectical negation, the possibility of deceleration or cooling down. Generally speaking, when things are suddenly brought into motion, they create friction; when things rub against each other, heat is generated at the interstices. Heat, for those who have been caught unawares by it, may result in torridness and apathy, but it may also trigger a number of other transformations, the trajectories of which may not be clear at the outset. When water is brought to the boiling point, for instance, it changes into a different substance. In a similar fashion, we arguably find ourselves at a "systemic edge" these days, as economic, as social and cultural forms of globalisation are expanding into ever new territories, often changing the very fundamentals of customary life for those who find themselves taken in by the whirlwinds of change. These processes are not unilaterally negative or positive for those affected by them, since what may be perceived as a crisis by some could very well represent positive opportunities to others, and the potential for spontaneous transformative moments is always present. Even climate change is sometimes welcomed, for example in cold regions where agriculture becomes feasible, or even further north, where the melting of the Arctic ice creates exciting opportunities for oil companies and may lead to the opening of new shipping routes. Overheating consists in a series of unintended, and interrelated, consequences triggered by global neoliberal deregulation, technological developments rendering communication instantaneous and transportation inexpensive, increased energy consumption, and a consumerist ethos animating the desires of a growing world population.

One significant aspect of overheating is the lack of a thermostat or governor. There is no instance which has the authority to order the Anthropocene world to cool down owing to its destructive effects. As a result, runaway competition continues to escalate, notwithstanding the sudden break caused by the Covid-19 pandemic. This is one reason why a sustainable politics of the Anthropocene urgently needs to be theorised and conceptualised.

Overheating can be identified in many domains. Tourism has increased sixfold since the late 1970s, from 200 million to more than 1.2 billion international tourist arrivals annually in 2019. Global energy consumption, which has increased by a factor of thirty since Napoleon Bonaparte's exile, has doubled since 1975. Capitalism, globally hegemonic since the nineteenth century, is now becoming universal in the sense that scarcely any human group now lives completely independently of a monetised economy. Traditional, often communal forms of land tenure are being replaced by private ownership, subsistence agriculture is being phased out in favour of industrial food production, siphoning former peasants into the informal sector in cities; the affordances of the smartphone replace orally transmitted tales, and by 2007, more than half of the world's population lived in urban areas. By the middle of this century, the proportion may be seventy per cent. The state by now enters into people's lives almost everywhere, though to different

degrees and in different ways, and individual states have proved incapable of addressing the burning issues to do with ecological crises and climate change.

PLANTATIONOCENE

The overheated Anthropocene was not an inevitable outcome of 1493. Other trajectories are easily imaginable. Nonetheless, the convergence and mutual reinforcement of the scientific revolution after the Renaissance, the economic growth in the imperial centres resulting from increased trade and pillage, slavery and plantations, technological advances resulting at least partly from competition between the early modern European states and the incipient secularisation leading to faith in progress and development replacing Christian dogma, encouraged the growth of a capitalist world economy, as famously analysed by Wallerstein (1974–79) and—seeing it from the perspective of the colonised—Wolf (1982). The plantation, described by Mintz (1985) as a "proto-factory" based on standardisation, mass production and the disposability of labourers, contributed massively to the economies benefiting from it. The great homogenisation was under way.

For centuries, species of plants and animals were deliberately introduced to the colonies (and elsewhere—silkworms were smuggled out of China as early as the sixth century CE). Tropical botanical gardens were experimental sites for exploring agricultural potential. Cattle were shipped to Argentina, maize to East Africa, sugar cane to the Caribbean and so on. Only in the last few decades have introduced species come to be seen as a problem rather than a solution.

Species have migrated since the beginning of life on Earth, and—to note the parallel with cultural diversity—cultures have influenced each other since we started making abstractions many thousand years ago. The field of biogeography is the study of the dissemination of species in evolutionary time, and barriers such as mountain ranges, climatic zones and open stretches of ocean have been of particular interest. In oceanic islands, and in the isolated continent Australia, evolution could take separate paths. The giant tortoises in Galápagos, the dodo in Mauritius and the Komodo dragon on a handful of Indonesian islands could thrive for millions of years in the absence of competition or devastating predation. The temporal axis of cultural history is much shorter, but the patterns are comparable. In dense forests, barren semi-deserts and narrow mountain valleys, cultural forms evolved which long had limited contact with the outside world. In New Guinea, mountainous and forested, horticulture has probably been practised as long as grain production in Mesopotamia. When Europeans arrived in its highlands less than a century ago, it appeared to them as if time had stood still. Headhunting remained widespread, metals were unknown, and several hundred languages were spoken, most of them unrelated to all other languages. Along the northern coast, where there had been continuous contact with traders, pirates, castaways and eventually missionaries and colonial administrators, the situation was different. Most of the inhabitants spoke Austronesian languages, related to other languages from Madagascar to Rapa Nui. The ocean has always been a road, both biologically and culturally speaking, its islands and ports crossroads and hubs of migration, hybridisation, creolisation, and exchange.

This road was macadamised and turned into a smooth highway in the centuries following 1492. Eventually, the territorial expansions of animals and plants on land, natural rafts and migratory birds were no longer needed for species to spread. Human migrations might now take the form of transatlantic slavery, enforced labour in silver mines and movement into growing cities both in and outside of Europe. States and empires took shape worldwide, and they increasingly began to resemble each other, especially after the First World War. Again, it needs to be pointed out that such exchanges and movements existed before 1492 as well; one may only think of the trade networks of the Roman empire or the slave raids of the Moors. Yet, the scope, extent and velocity of these exchanges started to increase, with serious unintended side-effects for people and nature.

Since the end of the Cold War, it is as if all speed limits on the global highways have been abandoned. Changes now take place at a rate making it difficult for researchers and commentators to follow them; for example, climate change projections are uncertain and are continuously being modified.

In *1493*, Mann devotes a great deal of attention to food production, and one of his concerns is the reduction of biological diversity in an era dominated by the logic of the factory and the plantation, where the entire world is considered a market. When an oil palm plantation replaces a rainforest, not only do a variety of trees of different species disappear, but so do microorganisms, insects, the birds feeding on the insects, rodents, lizards, a diverse undergrowth and the fungal networks helping to sustain the forest. The soil composition changes, and the entire biotope is simplified and standardised. I am writing this in a cabin on the south-eastern coast of Norway, where the cod, until recently ubiquitous, has all but been driven to extinction locally. At the same time, fish farming—the cotton plantations of the sea—is booming.

A similar objection as that directed to plantation monoculture was raised against industrially produced goods in the nineteenth century, when guilds and connoisseurs criticised them for being simplified, identical and bland. Yet mass production turned out to be profitable, commodities became cheaper, and the standard of living improved.

The green revolution in agriculture has led to comparable effects. Productivity has increased, mass starvation has nearly been eradicated in large countries like India, but the price to pay is a loss of diversity and flexibility.

In *The McDonaldization of Society*, Ritzer (first ed. 1993) argues along the same lines, updating Weber on rationalisation. He describes a world of production and consumption where upscaling, simplification and standardisation dominate. Large chains outcompete smaller businesses, and common denominators rule because they generate the most revenue.

In the realm of culture, it is more difficult to measure diversity than in biology. Ritzer refrains from an assessment of entire

life-worlds, limiting himself to observable consumption. Many scholars of consumption have argued, contrary to the McDonaldisation thesis, that consumers are creative and independent, and that apparent standardisation conceals great variation. This view is not irrelevant, but it remains indisputable that the new diversity is different from the old. If it can reasonably be claimed that each language conjures up a world with some unique features, predictions of language death suggest that the cultural diversity in the world is faced with a mass extinction comparable to the observable reduction in biological diversity.

WHAT OF THE NEW DIVERSITY?

The claim that cultural diversity in the world is being reduced demands a closer examination. For is it not a fact that precisely this moment of accelerated globalisation produces a plethora of new cultural forms owing to transnational communication and migration?

The concept *super-diversity* has been suggested, by Vertovec (2007), in order to describe the *diversification of diversity*, especially as it can be observed in cities, the cultural crossroads *par excellence*. His observation is valid, and it is true that new identities are continuously being produced—religious, ethnic or post-ethnic, pertaining to gender—but they tend to conform to a uniform, global grammar. Across the world, there are people who emphasise their uniqueness, but they usually do so in the same ways, conforming to individualism, consumerism and choosing among the alternatives on offer in the supermarket of individual choice.

Ethnicity does not result from cultural differences, but amounts to ideologies of cultural difference. Ethnicity consists in making cultural differences comparable, meaning that in order to communicate their difference, people must first attune themselves to a transcultural conversation about cultural difference. Before the Homogenocene, different peoples could be unintelligible to each other. In *Tristes Tropiques*, (Lévi-Strauss 1976 [1955]) describes an encounter with a Brazilian indigenous group in the 1930s as if there were an invisible glass wall between them: They could see each other, but communication was impossible.

The great leveller of modernity, producing what Gellner (1983) spoke of as cultural entropy, enables communication and comparison. Formerly, the other could come across like Wittgenstein's lion: If it could talk, we would not understand what it said.

The reduction of diversity is not without its benefits. While it did reduce crop diversity, the Green Revolution saved millions of lives by concentrating on a few, highly productive cereals. The advantages of using English as an international language are similarly obvious, and arguably enables many to expand rather than limit their cultural repertoire. The new forms of diversity led Hannerz to argue, in a rejoinder to Gellner, that a "return of Kokoschka" (Hannerz 1996) had taken place in the new, diverse cultural settings. Similarly, invasive species have sometimes found vacant niches and led to an increased diversity in local ecosystems (Thompson 2014).

At the same time, the underlying grammar is simplified and standardised. In the realm of culture, the anthropologist Clifford Geertz memorably quipped: "[C]ultural difference will doubtless remain—the French will never eat salted butter. But the good old days of widow burning and cannibalism are gone forever." (Geertz 1984: 105).

The UNESCO did not see this distinction when they produced the report *Our Creative Diversity* (UNESCO 1995). The authors celebrated cultural diversity while at the same time promoting a global ethics. Everybody should, in other words, be encouraged to be different and unique, but only in so far as they followed the established rules. They had to become similar in order for their uniqueness to be legitimate. Handicrafts, yes. Headhunting, no.

In a manner resembling the new cultural diversity, biological diversity is being safeguarded in national parks, zoos, and seed banks, but outside the reserves, the tendency is unequivocal. The loss of variation is undisputable both as regards culture and biology. This reduction of options leaves us with reduced flexibility, and the systemic effects are potentially catastrophic.

EXTINCTIONS

History never has a single direction, unless imposed by historians. Different parts of a culture change at different speeds. Norwegians will continue to be devoted to the outdoor life, and in Melanesia, people will still sacrifice pigs to the ancestors, although they now have smartphones and take part in a monetary economy. It may well be the case that English suppresses many small languages, but as a compensation, the English language becomes richer and more diverse, with many local variants and dialects. Yet there are striking parallels between descriptions of species extinction and biodiversity loss, as detailed in Kolbert's celebrated *The Sixth Extinction* (Kolbert 2014), and the situation for cultural diversity today, not least as regards small, stateless groups. It is true that indigenous people have never lived in total isolation, but the speed and comprehensiveness of the present encompassment by the forces of globalisation are unprecedented in history.

Kolbert identifies a series of causes for what she speaks of as the sixth extinction, taking lessons from the previous five extinctions as she goes along (the most famous of which was the temporary cooling of global climate following a meteor crashing on Yucatán, 66 million years ago, and leading to the extinction of the dinosaurs).

Some of the causes of extinction described by Kolbert are species invasion, habitat loss or fragmentation, overexploitation of natural resources and natural disasters, but the most important cause, related to some of the others, is anthropogenic ecological destabilisation, that is pollution and climate change.

Parallels can be drawn between Kolbert's analysis of biodiversity loss and processes affecting people and their cultural worlds. Habitat loss resembles the effects of "accumulation by dispossession" (Harvey 2003) whereby people lose their homes and livelihood owing to large-scale

infrastructural developments, becoming urbanised or proletarianised because there is no other option available. Overexploitation of resources also deprives indigenous people of their livelihood, and species invasion may have a parallel in the homogenising effects of states and markets. Climate change, needless to say, affects people as well as the rest of nature (UNEP, 2021).

Culture has a different internal dynamics than biology, but this should not detract attention from the parallels. Benevolent state policies on indigenous matters resemble the thinking behind national parks. State control and the relentless desire to translate everything to measurable and profitable "resources" in the corporate world contribute to upscaling and homogenisation in both realms. The benefits of homogenisation are gauged with the universal standards of modernity: Economic growth, improved access to education, reduced child mortality, improved sanitation and so on. Not everybody benefits. Some are faced with the bill without having had the chance to reap the benefits. Ultimately, everybody loses because future options are narrowed and we are collectively painting ourselves into a corner. The greatest loss, seen from a long-term global perspective, is the loss of flexibility. The insistence on a single economic system presupposing eternal growth, a few highly productive food crops and, not least, the destructive and potentially catastrophic reliance on fossil fuels, leads to a game with high stakes and one that cannot be won in the long term.

A potentially fruitful way of conceptualising this situation is by analysing it as one of *reduced semiotic freedom*.

SEMIOTIC FREEDOM AND THE HOMOGENOCENE

A pioneer in the emerging field of biosemiotics, Jesper Hoffmeyer had a suitably interdisciplinary background in chemistry, biology, philosophy, and semiotics. In biosemiotics, relationships in nature are interpreted as acts of communication. When a fox becomes aware of a hare in the vicinity, its reaction forms part of a semiotic chain together with the hare's response and flight, the hunt and its outcome. Hoffmeyer once said that if he were to summarise the entire history of evolution in one sentence, he would say that evolution has, over the millions of years, led to an overall *growth in semiotic freedom* (Hoffmeyer 1998). Allow a short explanation.

All organisms have a certain degree of semiotic freedom, that is an ability to respond to their environment in different ways. A plant may stretch towards the sunlight or direct its roots to the most nutritious parts of the soil; some plants do not, and they lose. A dog may play with its owner and pretend to bite her; in other words, it is capable of meta-communication (Bateson 1972). The relationship between human and dog releases a greater semiotic freedom—more alternatives, greater depth in signification, more flexibility—than the relationship between a pine tree and the mushrooms and ferns growing beneath it, although an exchange of signs and responses also take place in the latter case. Hoffmeyer thus describes an evolutionary movements towards more complexity, more communication, more relationships and a denser forest of signs sending a growing number of messages in a hierarchy of logical levels.

A reading of biosemiotics which connects it to the homogenising effects of globalisation described in this article makes it possible to conclude that the development is now being reversed. The beginning of the modern environmental movement was marked by the publication of Rachel Carson's *The Silent Spring* (Carson 1962), the opening gambit of which is the observation that the songbirds were gone. Similarly, in oral African cultures it is said that when an old tribesman dies, it is as if a library is burnt down.

Hoffmeyer does not mention the five mass extinctions in evolutionary history, which must have led to a temporary reduction in semiotic freedom, but his argument is nevertheless an important one. It can be applied to the cultural history of humanity. Since the origin of *homo sapiens* in Africa around 250,000 years ago, groups have branched off, diversified, adapted to and developed viable niches in all biotopes except Antarctica. Thousands of mutually unintelligible languages, unique religions and customs, kinship systems, cosmologies and economic practices produced a world of a fast growing number of differences. What seems to be happening today as a result of frantic human activity across the planet is nevertheless a reduction in semiotic freedom, a loss of flexibility and options. This seems to be the case both with respect to the nonhuman world and that of culture and society.

This means that if Hoffmeyer's view has been correct up to the near-present, it now seems that we shall have to reconcile ourselves with a world with decreasing semiotic freedom, both in the cultural and the biological domains. The political challenge consists in halting this movement away from a world of many little differences to one of a few major ones, and thus, it may be argued that a concern with biological diversity and cultural diversity are two sides of the same coin.

FROM TINA TO TAMA: SCALING POLITICS OF THE ANTHROPOCENE

The political agents resisting the Homogenocene are of a different kind to those typically studied by political scientists. Since the reduction of diversity is caused by governments and corporate interests, it is necessary to look elsewhere for resistance movements. I shall briefly describe some of them, indicating that although they may have comparable objectives, they work in different settings and on different scales. The plurality of movements working to retain local autonomy and healthy ecosystems effectively falsifies the TINA (There Is No Alternative) doctrine popularised in the 1980s by Margaret Thatcher by showing that in fact, TAMA (There Are Many Alternatives).

One such proposed alternative is rewilding. Rewilding Europe, an NGO starting in 2011, has partnered with governments and sponsors with the aim to restore ecosystems that have been affected by global homogenisation. Currently, Rewilding Europe has eight active projects, from Portugal to Swedish

Lapland. Restoration of ecosystems also takes other forms, and it is practised on many scales. In Tasmania, for example, civil society volunteers spend Sundays removing invasive shrubs—some of which were deliberately imported for their beauty as late as the 1970s—from the landscape, trying to strengthen the relative position of endemic plants. Further north, in Queensland, "toadbusting" is an organised activity for volunteers in many locations, where the aim is to curb the spread of the deliberately imported, but now invasive and destructive, cane toad, originally a Central American species. On a slightly larger scale, the transformation of South African farms into game parks has led to the reintroduction of animals—mainly herbivores, but also big cats in a few cases—to regions where they had been driven to extinction in historical times. An unknown concept at the turn of the millennium, rewilding is now being recognised as a tool of what we might call "salvage ecology".

The greater semiotic freedom of humans, compared to other species, entails above all self-consciousness and reflexivity. Hence, although the European bison (part of a rewilding project) cannot represent itself—it must be represented—people can, and they do. Lien (2021) describes a court case concerning land rights in northern Scandinavia, involving the Norwegian state and Sami reindeer herders. One of the herders, called as a witness in court, was asked to identify the location of his migratory route on a map. He refused, explaining its location instead by describing geographical and topological features, affirming that he had never needed to use maps. The literature on Sami ways of engaging with the world is substantial, much of it written by Sami scholars who thus function as cultural brokers. Sami land rights activists emphasise traditional forms of stewardship based on tradition rather than law, and many Sami also show a different way of relating to their environment, a different cosmology and view of social relations than that which is dominant in majority Nordic society (Eriksen et al., 2019).

Other indigenous groups are in a weaker bargaining position. Wilhite and Salinas (2019) have showed how indigenous groups in South America as well as India receive the sharp end of the stick threefold: by being deprived of their land and livelihood, by losing their option of cultural reproduction, and as victims of climate change. There are nevertheless positive examples from the Global South as well of indigenous groups mobilising successfully to retain their right to define and govern themselves. The most famous example is probably that of the Yanomami in Brazil, who were given rights to a territory of 99,000 square kilometres (twice the size of Denmark) by the Brazilian government in 1992. In recent years, the autonomous territory has nonetheless been invaded by thousands of *garimpeiros*, goldminers, with the tacit support of the Bolsanaro government.

Another form of resistance, described by Conversi (2021), is represented by faith-based communities such as Amish, who actively choose to stay aloof from mainstream capitalist state society. Both small-scale indigenous groups and these alternative communities (ecovillages could also be mentioned) are downscaled politically, with limited participation in the monetary economy, and they are ecologically sustainable. Hendry (2014), an anthropologist, has surveyed small-scale stateless societies with a view to glean insights into the kind of ecological thinking and practice that could contribute to changing the course of history away from certain catastrophe.

Yet considering the size and complexity of the human population (36 per cent of the planetary mammalian biomass is now human), there can be no return to the Garden of Eden, which does not mean that there are not useful lessons to be learned from indigenous cosmologies and small-scale countercultures. Significantly, all attempts to reinstate some of the lost diversity has an element of downscaling. For example, Conversi and Hau (2021) present and compare left-leaning secessionist parties in European countries, notably Scotland and Catalonia, which are favourable to radical climate policies. They identify a shift from a national romanticism glorifying the purity and authenticity of local nature to a pragmatic, concrete and demanding climate policy for the present.

The final example is that of the Creole Garden project in the Seychelles, where cultural specificity and biodiversity are at play simultaneously. A pilot project funded by the UNESCO, the Creole Garden aims to recover knowledge about crops and foods that can be grown locally. Ironically, the Creole garden arose from plantation slavery, but as a side-effect deemed uninteresting by the plantation owners, but essential for the slaves, who grew a variety of crops on their tiny plots for subsistence.

However, as the project proposal explains, and I quote it at some length, with modernity and the advent of supermarkets and flats and housing estates replacing the traditional creole community, the Creole Garden has lost ground and is not being transmitted to the younger generation.

And yet, the Creole Garden provides sustenance, traditional creole culinary skills and ingredients which are the basis of the celebrated creole cuisine in tourism, as well as medicinal plants that reduce the need to go to the doctor. During the Covid-19 lockdown period in Seychelles, our dependency on imported goods became glaringly clear as planes suddenly reduced to essential cargo, and certain fresh vegetables that were flown in every day became scarce. People started planting in pots if they lived in flats, and those who had land began planting typical creole foodstuff such as plantains, dessert bananas, yam, sweet potatoes, tomatoes and herbs.' (University of Seychelles 2021).

The Creole garden project brings many of the strands of the argument together. 1) It came about—somewhat ironically—as an unintentional effect of plantation slavery and the beginnings of the Homogenocene. 2) It rejects quests for purity, instead focusing on what works in the local ecology regardless of its origins. 3) It is small scale, scaled down to the household level. 4) The Creole garden combines a concern with biodiversity with the objective of saving Creole culture from oblivion at a time of Netflix and the smartphone. 5) The project is critical of the homogenising tendencies of large-scale production and distribution; in effect, it seeks to replace tinned food, imported mangoes and carrots with locally grown produce. This kind of project may well turn out to be an exemplar for a politics of the Anthropocene.

The question I have raised in this article concerns politics, specified as *the political*, engaging not with established political

institutions, but rather political actions and projects engaged in by activists, NGOs and citizens wishing to contribute to political change. Since the contradictions of the overheated Homogenocene are the collateral damage of the state and the globalised fossil fuel economy, solutions must be sought elsewhere. This should not be taken to mean that only localised, or even grassroots movements are the only viable alternative. International agreements such as the ambitious UN Convention on Biological Diversity can be significant, but as the negative experiences of the Kyoto Agreement indicate, they are worthless unless implemented, and most governments have chosen not to do so. For this reason, a politics aiming to counteract the destructive effects of the global fossil fuel industry and the accompanying impoverishment of the biosphere and cultural diversity of the planet should mainly aim to scale down, but sideways scaling through networks of localised initiatives is also a highly relevant option, which can now be achieved, somewhat paradoxically, by means of the very same electronic technology which is also a powerful cause of standardisation.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/Supplementary Material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

REFERENCES

Anderson, B. (1983). *Imagined Communities. An Inquiry into the Origins and Spread of Nationalism*. London: Verso.

Barber, B. (1995). *Jihad versus McWorld: How Globalism and Tribalism Are Reshaping the World*. New York: Ballantine.

Bateson, G., Jackson, D. D., Haley, J., and Weakland, J. (1956). Toward a Theory of Schizophrenia. *Behav. Sci.* 1, 251–264. doi:10.1002/bs.3830010402

Bateson, G. (1972). *Steps to an Ecology of Mind*. New York: Bantam.

Castells, M. (1996). *The Rise of the Network Society*. Oxford: Blackwell.

Conversi, D. (2021). Exemplary Ethical Communities. A New Concept for a Livable Anthropocene. *Sustainability* 13, 5582. doi:10.3390/su13105582

Conversi, D., and Hau, M. F. (2021). Green Nationalism. Climate Action and Environmentalism in Left Nationalist Parties. *Environ. Politics*. doi:10.1080/09644016.2021.1907096

Crosby, A. (2003). *The Columbian Exchange: Biological and Cultural Consequences of 1492*. Westport, CT: Praeger.

Crystal, D. (2014). *Language Death*. Cambridge: Cambridge University Press.

Dawkins, R. (1986). The Blind Watchmaker. *Why* the Evidence Of Evolution Reveals a Universe Without Design. New York: Norton.

Diamond, J. (2005). *Collapse: How Societies Choose to Fail or Succeed*. New York: Viking.

Durkheim, E. (1997). The Division Of Labour In Society, *Trans. W. D. Halls*. New York: Free Press.

Elhacham, E., Ben-Uri, L., Grozovski, J., Bar-On, Y. M., and Milo, R. (2020). Global Human-Made Mass Exceeds All Living Biomass. *Nature* 588, 442–444. doi:10.1038/s41586-020-3010-5

Eriksen, T. H. (2018). *An Overheated World*. London: Routledge.

Eriksen, T. H. (2016). *Overheating: An Anthropology of Accelerated Change*. London: Pluto.

Eriksen, T. H., Valkonen, J., and Valkonen, S. (2019). *Knowing from the Indigenous North: Sami Approaches to History, Politics and Belonging*. London: Routledge.

Geertz, C. (1984). Distinguished Lecture: Anti Anti-relativism. *Am. Anthropologist* 86 (2), 263–278. doi:10.1525/aa.1984.86.2.02a00030

Gellner, E. (1983). *Nations and Nationalism*. Oxford: Blackwell.

Hannerz, U. (1996). *Transnational Connections*. London: Routledge.

Harvey, D. (2003). *The New Imperialism*. Oxford University Press.

Hoff, J., Gausset, Q., and Lex, S. (2019). *Building a Sustainable Future: The Role of Non-state Actors in the green Transition*. London: Routledge.

Hoffmeyer, J. (1998). Semiosis and Biohistory: A Reply. *Semiotica* 120 (3/4), 455–482. doi:10.1515/semi.1998.120.3-4.455

Hornborg, A. (2019). *Nature, Society, and Justice in the Anthropocene: Unraveling the Money–Technology–Energy Complex*. Cambridge: Cambridge University Press.

Kolbert, E. (2014). *The Sixth Extinction: An Unnatural History*. New York: Holt.

Lévi-Strauss, C. (1976). *Tristes Tropiques, Trans. John Weightman and Doreen Weightman*. Harmondsworth: Penguin.

Lien, M. E. (2021). "On *Not* Using Maps; Colonising Practices and Modes of Knowing in Finnmark, Northern Norway,". Paper presented at the workshop 'The New Commons' (Oslo: Department of Social Anthropology). May 2021.

Mann, C. C. (2011). *1493: Uncovering the New World Columbus Created*. New York: Vintage.

Mathews, A. S. (2020). Anthropology and the Anthropocene: Criticisms, Experiments, and Collaborations. *Annu. Rev. Anthropol.* 49, 67–82. doi:10.1146/annurev-anthro-102218-011317

McLuhan, M. (1994). *Understanding Media: The Extensions of Man*. London: Routledge.

McNeill, John. R., and Engelke, P. (2016). *The Great Acceleration*. Cambridge, MA: Harvard University Press.

Mintz, S. W. (1985). *Sweetness and Power: The Place of Sugar in Modern History*. Harmondsworth: Penguin.

Ritzer, G. (2004). *The Globalization of Nothing*. London: Sage.

Ritzer, G. (1993). *The McDonaldization of Society: An Investigation into the Changing Character of Contemporary Social Life*. Newbury Park, CA: Pine Forge Press.

Rivers, W. H. R. (1922). *Essays on the Depopulation of Melanesia*. Cambridge: Cambridge University Press.

Smil, V. (2017). *Energy and Civilization: A History*. Cambridge, MA: MIT Press.

Steffen, W., Crutzen, P. J., and McNeill, J. R. (2007). The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature. *AMBIO: A J. Hum. Environ.* 36 (8), 614–621. doi:10.1579/0044-7447(2007)36[614:taahno]2.0.co;2

Syvitski, J., Waters, C. N., Day, J., Milliman, J. D., Summerhayes, C., Steffen, W., et al. (2020). Extraordinary Human Energy Consumption and Resultant Geological Impacts Beginning Around 1950 CE Initiated the Proposed Anthropocene Epoch. *Commun. Earth Environ.* 1, 32. doi:10.1038/s43247-020-00029-y

Tainter, J. A. (2014). Collapse and Sustainability: Rome, the Maya, and the Modern World. *Archeological Pap. Am. Anthropological Assoc.* 24, 201–214. doi:10.1111/apaa.12038

Tainter, J. A. (1988). *The Collapse of Complex Societies*. Cambridge: Cambridge University Press.

Thompson, K. (2014). *Where Do Camels Belong? the Story and Science of Invasive Species*. London: Profile.

Tönnies, F. (1963). *Community and Society*. New York: Harper & Row.

UNEP (2021). Convention on Biological Diversity. Available at: https://www.cbd.int/convention/text/ (Accessed July 18, 2021).

UNESCO (1995). *Our Creative Diversity*. Paris: UNESCO.

University of The Seychelles (2021). *Intangible Cultural Heritage Case Study – Seychelles: Supporting Research and Documentation of Indigenous Knowledge Systems on Biodiversity Conservation, Climate Change and Disaster Risk Reduction in Eastern Africa. Unpublished Project Proposal*. Anse Royale: University of Seychelles.

Vertovec, S. (2007). Super-Diversity and its Implications. *Ethnic Racial Stud.* 30 (6), 1024–1054. doi:10.1080/01419870701599465

Vogel, J., Steinberger, J. K., O'Neill, D. W., Lamb, W. F., and Krishnakumar, J. (2021). Socio-economic Conditions for Satisfying Human Needs at Low Energy Use: An International Analysis of Social Provisioning. *Glob. Environ. Change* 69, 102287. doi:10.1016/j.gloenvcha.2021.102287

Wallerstein, I. (1974). *The Modern World-System (3 Vols)*. New York: Academic Press.

Wilhite, H. (2016). *The Political Economy of Low Carbon Transformation: Breaking the Habits of Capitalism*. London, England: Routledge.

Wolf, E. (1982). *Europe and the People without History*. Berkeley: University of California Press.

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From Local Concerns to Global Challenges: Continuity and Change in Sub-state "Green Nationalism"

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Issues related to anthropogenic climate change such as global warming, fossil fuel emissions, and renewable energy have emerged as some of the most important and pertinent political questions today. While the role of the state in the Anthropocene has been explored in academia, there is a severe dearth of research on the relationship between climate change and nationalism, especially at the sub-state level. This paper builds on the concept of "green nationalism" among sub-state nationalist parties in European minority nations. Using a multimodal analysis of selected European Free Alliance (EFA) campaign posters from the past 30 years, the article explores an extensive "frame bridging" where minority nationalist political actors actively seek to link environmental issues to autonomy. Although there is an apparent continuity in minority nationalist support for green policies, earlier initiatives focused on preservation of local territory while EFA parties today frame climate change as a global challenge that requires local solutions, which only they can provide. The frame bridging between territorial belonging and progressive politics has lead to the emergence of an environmentally focused, minority nationalist agenda that advocates for autonomy in order to enact more ambitious green policies, or "green nationalism". This shows that nationalism in the right ideological environment can be a foundation for climate action, as minority nationalist actors base their environmentally focused agenda to address the global climate crisis precisely on their nationalist ideology.

Keywords: campaign posters, climate change, frame analysis, nationalism, sub-state, visual analysis

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INTRODUCTION

Anthropogenic climate change is rapidly becoming one of the most central issues in contemporary politics with ramifications at all levels of governance. Despite its importance, few scholars within the field of nationalism studies have worked on climate change and related topics. This is puzzling, as nationalism has been outlined as a direct consequence of industrialization (Gellner 1983) and capitalist modernity (Greenfield 2001), making its role in the "Anthropocene" both central and understudied as the "principal operative ideology of modernity" (Malešević 2019:33).

While a large scholarship is emerging on the role of the state in environmental politics (Jahn 2014; Duit et al., 2016; Sommerer and Lim 2016; van Tatenhove, 2016; Hildingsson et al., 2019), the first and equally important element of the word "nation-state" is severely neglected. Since nationalism and the ideal of the nation-state influences all elements and levels of contemporary politics, it also has profound effects on how communities deal with climate change. Similarly, while important work has begun on sub-state environmental policies (Galarraga et al., 2011; Bruyninckx et al., 2012; Brown 2017a; Halkos and Petrou 2018; López-Bao and Margalida 2018; Conversi and Ezeizabarrena 2019),

there is an absence of work that deals directly with the *nationalist* aspect in minority nations or "ethnoregions". This article attempts to remedy this by building upon an earlier argument that a "green nationalism" has emerged in European minority nations (Conversi and Hau 2021).

In this article, I focus on the relationship between autonomy and environmental issues at the sub-state level in an attempt to "liberate the geographical imagination from its state-based shackles" (Murphy 2010:769). Through a qualitative, multimodal analysis of selected campaign posters from the past 30 years across minority nationalist parties in the European Free Alliance (EFA), the largest grouping of autonomist, regionalist and pro-independence parties within the European Parliament, I argue that there is an unexplored continuity and change in how these perceive and champion environmental issues. Principally, sub-state nationalist actors have consistently maintained a discursive linkage between autonomy and environment since the 1970s. The nature of this relationship has however evolved from more parochial concern with preserving the local environment to a universalist understanding of climate change and the need for concrete green policies at the local level: a modern "green nationalism".

NATIONS AND NATIONALISM

As Mccrone, (1998) notes, there is no universal theory or firm definition of nationalism in academia (1998:3). Ernest Gellner has famously offered that nationalism stipulates that ethnic boundaries should not cut across political boundaries (Gellner 2008:1). The ideology of nationalism legitimates its own existence based on shared and specific characteristics such as ethnicity, language, or culture (Low 2000:357). It makes universalist claims because it supposes that the world is divided into bounded nation-states with certain rights and privileges (Conversi 1997; Boucher and Watson 2017:205). The rules of the current political playing field of "the world of nations" as Billig (1995:10) termed it, are that a nation should have a state, preferably all to itself (Gellner 1983:51). In Anthony Giddens' memorable words, the nation-state is the "pre-eminent power-container of the modern era" (Giddens, 1987:120), the key components being a territorial boundedness and control over the means of violence.

Because of its bounded nature, the ideology of nationalism may have inherent difficulties in addressing global challenges such as the consequences of anthropogenic climate change. As Archibugi et al. (2011) note, addressing environmental issues at a purely local or national level does not represent sustainable change (2011:140). Some scholars have questioned whether nationalism, an ideology of the 19th century, is the correct answer to the biggest challenge of the 21st century (Braun 2021), or analyzed nationalism as a hindrance to climate action (Forcthner and Kølvraa, 2015).

However, others such as David Held have emphasized the durability of the (nation) state system, arguing that contemporary, supranational changes to the global system does not represent a direct challenge to the idea of the nation-state itself (1999:422). In a more radical vein, Anatol Lieven proposes that while climate change does represent a significant challenge to the nation-state, precisely that constellation is also the most powerful tool available to combat it, as nationalism provides the mass solidarity necessary to mobilize populations to climate action and collective effort (2020:xv). Further, since nationalism is a so-called "thin" ideology (Freeden 2003:32), it can be mobilized by a myriad of groups from the far right, far left, pro-business neo-conservative, anarcho-syndicalism—or, environmental and progressive political movements.

In this paper, I argue that the "green nationalism" of European minority nations represents coherent and persistent climate action that has developed from pre-existing attitudes of environmental protection of the territory (Conversi and Hau 2021). This new green nationalism is a 21st century ideology builds heavily on discursive frame bridging between increased autonomy or independence and climate issues and links early national Romanticist notions of territory and landscape with modern sustainability goals to create electorally successful political movements that combine support for autonomy and environmental policies. By grafting a progressive, universalist understanding of green policies unto traditionalist nationalist imagery, (minority) nationalism emerges as a foundation for climate action, rather than a hindrance to it.

Specifically in European minority nations, a fruitful scholarship has emerged on how nationalist actors graft an autonomy-focused agenda on to a plethora of "progressive politics" in their political project. This includes social programs and welfare (Culla 2013: 373), social democracy (Lynch 2009; Serrano 2013), intercultural integration of immigrants (Hepburn 2011; Griera 2016; Conversi and Jeram 2017), and local democracy (Guibernau 2013). Further, there is a positive correlation with left-wing ideologies and support for independence in both Catalonia (Serrano 2013:538), and in Scotland where Scottish interests has become increasingly equated with left-wing politics (Mitchell et al., 2012:129). The article explores how minority nationalist actors seek to integrate green policies into their struggle for autonomy, arguing that a crucial point is how (minority) nationalism can lead to support for climate action.

Green Nationalism and Green Nation Building

I use green nationalism to signify an emerging understanding in European minority nations that the goal of minority nationalism - in the form of increased autonomy or outright independence - is a prerequisite for climate action. This rhetorically ties local concerns of autonomy and ecological preservation to global issues of climate change and the Anthropocene. There exists a certain continuity—visual and rhetorical—between contemporary minority green nationalism and earlier Romantic nationalist tropes of the land, which are common in nationalist imagery. The most significant change lies in the shift from a particularist to a universalist understanding of the environment, which is characteristic of this new green nationalism.

As David McCrone has written, nationalists tend to make great play of geography (1998:5); rivers, mountains, forests, and valleys all occupy central places in nationalist geo-political imaginaries. Since nationalism is intrinsically related to issues of belonging and

territory, the relationship between the (local) environment and nationalism is not a recent phenomenon. Already Johann Herder, a seminal voice of early German nationalism, associated nations with territories marked by a particular climates and topographies (Patten 2010:15). Landscape features both natural and fabricated infrastructure are reproduced socially and culturally through text, art, media, schools—and political posters. This means that symbolic and mental landscapes are "deeply embedded in the image and self-understanding of nations and regions" (Sörlin 2010). Indeed, the articulation and evoking of territory is in itself a vital part of the historical emergence and growth of nationalism and regionalism. As such, the connection between Romantic ideas of the (rural) landscape and nationalism has been explored fruitfully in many contexts: From an "ideology of the rural" in cottage landscape imagery that embodies and shapes Irish national identity (Cusack 2001), to aesthetic-nationalist antagonism between French and English garden design as signifiers of national identity (Weltman-Aron 2001), or monolingual English road signs as an everyday landscape of national oppression in Wales (Jones and Merriman 2009).

The Romantic aspect of nationalism's environmental relationship is perhaps largely rhetorical, outlining a pristine sense of nationhood deeply connected to the national territory and tied to the soil, full of nostalgia and primordialism. The green nationalism introduced in a previous article (Conversi and Hau 2021) refers to more robust state-led policies where sub-state governments take concrete legislative steps to protect specific portions of the (minority) national territory. Despite a substantial shift from the conservationist or preservationist schemes of the 1970s to the full-spectrum policies needed to combat climate change in the 2020s, I argue that the underpinning rhetoric rests on a certain continuity, fusing traditional nationalist tropes such as territory, soil and belonging with the progressive political stance of most contemporary autonomist and pro-independence movements. The most significant change lies not necessarily in the support for green policies, but in the framing and narratives surrounding the issue. Where earlier minority nationalist rhetoric on green issues focused the local environment as a means to preserve national identity, EFA parties today have adopted a more universalist discourse that frames climate change as a global issue with possible local changes, effectively "glocalizing" the issue in successful frame bridging between autonomy and environmentalism. This means that the emphasis has changed from *our* environment to our *environment* in sub-state nationalist rhetoric; or from particularism to universalism.

A clear example of this new, universalist approach to climate action where minority nationalist political actors outline local autonomy as the key to collective, global climate solutions is "energy sovereignty". This is an emerging concept stating "the right of conscious individuals, communities and peoples to make their own decisions on energy generation, distribution and consumption in a way that is appropriate within their ecological, social, economic and cultural circumstances" (Various authors 2014), and is spearheaded by the *Xse*, Catalan Network for Energy Sovereignty (www.xse.cat). It seeks to bypass states in favour of popular sovereignty in energy production and consumption, and thus represents a fully evolved frame bridging between self-determination and sustainability and is a clear example of what I term green nationalism. In the EFA's most recent policy manifesto from 2019, sustainability is one out of eleven main policy areas, and here the discursive link between green policies and autonomy is evident through the explicit invocation of "energy sovereignty":

"It is essential that our regions and nations exercise *more energy sovereignty*, deciding on the forms of alternative energy to generate, at what price, and under which circumstances." (EFA 2019:12, emphasis in original).

This fusion of sustainability and autonomy concerns builds on the post-sovereignty position[1] adopted by many minority nationalist parties. As Michael Keating (2004) has noted, European integration has enabled minority nationalist movements to abandon traditional claims for sovereign statehood and adopt a "post sovereigntist" political position involving notions of shared sovereignty as well as an understanding of original authority as intrinsically divisible that transcends old models of statehood (2004:369). Other authors such as Manuel Castells (2011) has outlined Catalonia as the prototype of a post-Westphalian world order where sovereignty is not necessarily associated with the control of centralized state power (2011:50), and Lisanne Wilken (2001) has described how the Welsh Plaid Cymru's nationalist ideology is emphatically not based on the ideal of the nation state or on state sovereignty, but on a desired pre-sovereign cultural tapestry akin to Medieval Europe (2001:63). This post-sovereignty position is a key foundation for the new universalist framing of climate action through autonomy, or green nationalism.

Similarly, I argue that minority nationalist actors make use of the rhetorical-ideological assemblage between autonomy and climate action to engage in green nation-building (see Smith 1986). This implies devolved or sub-state governments using regional climate policies and investments in local green infrastructure and renewable energy to construct a shared understanding of a separate nation in the given territory. Here, minority nationalist actors draw boundaries with their majority nation through their green nationalism, contrasting ostensibly ambitious regional environmental policies with a perceived lack of central state investment in sustainability and renewable energy. This competition leads to minority nationalist governments attempting to surpass central governments in terms of climate action. The progressive type of sub-state green nationalism particular to EFA parties then emerges as the prerequisite for climate action, rather than a hindrance as is the case of right-wing nationalists in Europe who focus on *resource nationalism* (Conversi 2020; Kulin et al., 2021).

METHODS

In order to examine the claims, positions and policies of selected minority nationalist parties that combine issues of autonomy and nationalism with environmentalism, I use a multimodal analysis of selected EFA member parties' campaign posters: The Scottish National Party (SNP), the Republican Left of Catalonia (ERC),

[1]See further discussion in Hau 2019.

For Corsica[2], and the Galician National Bloc (BNG). The posters selected are not meant to be representative of these parties' visual campaigns as a whole, which would require a much deeper analysis best suited for another paper and a larger sampling size. Rather, they form part of a qualitative analysis of how minority nationalist parties have used representations of the environment politically and traces a qualitative shift in the significance of these representations. The poster selection is also not completely balanced; being larger parties in government, more material was available from the SNP and ERC compared with smaller, newer constellations such as For Corsica, who incidentally also have fewer devolved powers and therefore less ability to effect green policies.

The posters were selected from sub-state parliamentary archives such as the *Butlletí de la Generalitat de Catalunya*, the Scottish Political Archive at the University of Stirling with more than 2000 flyers, posters, and campaign leaflets, and various EFA parties' own archives. I looked specifically at visual representations of environmentalism and green policies over the past 40 years (in the case of Catalonia, fortuitously dating back to 1932). I substantiate the analysis by relying on policy documents and newspaper articles, including party manifestos drawn from the Manifesto Project Database, and relevant parliamentary bill proposals surrounding environmental, climate, and green policies, retrieved through the official websites of devolved parliaments and assemblies.

Posters have been important campaign tools for 200 years (Seidman 2008:1). While political posters have received scant attention in academic research (Rodríguez-Andrés and Canel 2017:1), posters contain valid statements on social reality and indicate important elements of social and political discourse (Geise and Vigsø 2017:43). Political posters document the messages of political actors and the images they are trying to convey to the public. As a genre of political communication, posters are however also dependent on the context that activates their potential for meaning, each poster reflecting certain political, social and cultural contexts that are involved in its production (Garcia 2007:34).

The posters selected for this paper include both *protest posters* (Geise 2017:15), produced as a socio-cultural critique and stemming from platforms involving both social movements and political parties, while others are *election posters*, instruments of strategic communication in a competition for votes (Ibid.). I examine the iconography and the semiotic–rhetorical components of the posters in a contextual analysis that unpacks the main themes through an attempt to "read" the images (Boucher and Watson 2017:6), where both text and image work together to produce certain statements or arguments that *anchors* the relevant meaning in a specific political climate (Kjeldsen 2002). I also lean on Peirce, (1940) typology of signs and Barthes' (2009) distinction between denotation and connotation in visual expressions. *Denotation* refers to pure, "objective" descriptions, such as a car on a road, while *connotation* refers to the culturally shared values that frame our interpretation of that image, such as mobility, comfort, pollution, etc. (Geise and Vigsø 2017:47). Furthermore, borrowing a method from art history, I look at the posters' visual iconography, which allows us to analyze their complex aesthetic messages (see Doerr 2017). Multimodality refers to a "semiotic interplay" where (written) language combines with other semiotic resources to express meaning (Kress and Leeuwen 2006:20). The political poster is an excellent example of multimodal text as it combines written text with a visual to express meaning (Martínez Lirola 2016:251).

Analytically, I use the concepts of "frame" and "frame bridging" in order to explore the complex relationship between autonomy issues and environmentalism in progressive minority nationalist parties. A frame identifies a social or political problem and a solution to be followed (Johnston and Noakes 2005: 5) and as such frames act as interpretative structures (Reber and Berger 2005: 186). In this article, the frames refer to the narrative structure that minority nationalist parties use in order to communicate their policy platform and state their claims. Developing on this concept, frame bridging refers to the linking of "ideologically congruent but structurally unconnected frames regarding a particular issue or problem" (Snow et al., 1986: 467). Frame bridging is useful for parties that seek to link two or more frames that were previously unconnected, such as nationalism and environmentalism, in order to form a new frame; in this case "green nationalism". This bridging highlights a deliberate and strategic effort to link interests, ideas and policy issues in order to effect public policy shifts and bears some relation with climate change "bandwagoning" (Jinnah 2011), but often takes on a life of its own as new political dynamics can emerge from successful frame bridging.

The analysis is restricted to the "progressive", center left minority nationalist parties of the European Free Alliance. While some right-wing nationalist movements may also have green agendas, that relationship is often adversarial and best analysed elsewhere on their own. Although some (right wing) minority nationalist parties such as *Lega Nord* are not members of the EFA, this party group is still the most significant expression of sub-state, regionalist, and minority nationalist political parties in the EU, and therefore represents a fruitful starting place for an analysis of the relationship between minority nationalism and environmentalism.

Analysis: Continuity and Change in the Environmentalism of Stateless Nations

Scotland and the Scottish National Party

A prime example of continuity and change in sub-state framings of environmentalism, Scottish nationalism was initially heavily focused on the extraction of North Sea oil reserves (Esman 1977). The SNP's first successful political campaign in the early 1970s, "It's Scotland's oil" was characterized by a resource nationalist narrative. The campaign's aim was to draw focus on the possible economic benefits of the North Sea oil reserves for an independent Scotland (see **Figure 1**).

The campaign poster connects (national) resources, welfare, and increased autonomy for Scotland. Set in stark black and white, four faces that denote a representation of the whole of Scotland (male, female, infant, and elderly) look directly at the viewer, seemingly confronting them in an act of Althusserian interpellation (Althusser 1971). The heading above the faces reads, *"It's his/her oil"*. Having hailed the viewer, the text below the faces asks direct questions to the viewer about the lack of jobs for Scots, sub-standard housing,

[2]For Corsica was a coalition between *Femu a Corsica*, *Corsica Libera*, and other smaller parties.

FIGURE 1 | SNP campaign leaflet 'It's his oil, it's her oil'. Accession Number: spa.gr.46.21, Scottish Political Archive, University of Stirling.

education, and elderly care and hypothermia. The poster is designed to be serious and somber, leading the viewer to ask why, if the rich natural resources of Scotland belong to its people, they are impoverished and disenfranchised. It asserts a normative rather than declarative claim, as Scotland is not a sovereign state and currently does not have maritime borders distinct from the United Kingdom, nor any territorial claims outside this polity. The campaign was supremely successful and resonated well with voters in the two 1974 United Kingdom general elections, leading to the SNP winning 7 seats and 22% of the Scottish electorate the February election and 11 seats and 30% in the October re-election. *Via* the campaign, the SNP was able to counter the existing narrative that Scotland was economically dependent on the United Kingdom, giving credibility to the idea of independence as an economically viable—and desirable—option.

Later, during the Thatcher government in the 1980s, the SNP ran another North Sea oil campaign. This campaign had a similar theme but a subtle difference in message, which was more adversarial towards the Thatcher government (see **Figure 2**).

This notorious poster depicts a smiling Margaret Thatcher with dripping fangs[3] and the text: *"No wonder she's laughing. She's*

[3]Interestingly, Thatcher was similarly demonized and depicted with fangs in Argentine newspapers following the Falklands War, and by the youth section of Labour, "Young Socialists" in campaigns.

FIGURE 2 | SNP campaign leaflet 'Scotland's oil'. Accession Number: spa.761.1.1, Scottish Political Archive, University of Stirling.

got Scotland's oil. Stop her—join the SNP". This poster maintains the message that Scotland's natural resources belong to the Scottish people, frame bridging between resource management and autonomy *via* a link between the national *territory* and national *collective*. However, this early 1980s poster is much more humorous than the 1974 one, Thatcher appearing highly satirized in a cartoony style. The poster's message is also deeply adversarial towards the Westminster government, capitalizing on the great animosity towards Thatcher in Scotland. According to Ichijo, Thatcher and her cabinet ideology of market-oriented, aggressive individualism was, and is, seen by many as a threat to Scottish communitarian values (Ichijo 2003:37). This is corroborated by Mitchell et al.'s seminal 2007 survey of SNP members, in which members mention joining the party because of specific events in Scottish political history. Most cited was the discovery of oil in the North Sea, the basis for SNP's popular 1970s campaign slogan, *"It's Scotland's oil!"*, and the runner-up was "Thatcherism" (Mitchell et al., 2012:74). This poster frame bridges three distinct issues: resource nationalism through the mobilization of the North Sea oil, anti-establishment antagonism towards the Thatcher government, and calls for increased Scottish autonomy. It also outlines the SNP as the vehicle to "protect" Scotland (and its natural resources) from Thatcher and Westminster, a narrative the party continues to this day with slogans such as, '*Standing up for Scotland"*.

This focus on oil and resource nationalism has however taken a backseat in SNP's visual communication, as the party has evolved more towards a "green nationalism" that links autonomy and environmentalism. This includes a much-publicized stance against hydraulic fracturing, with humorous *"Frack off!"* badges, and a focus on wind energy and renewables. For example, one of the slogans for the 2014 Scottish independence referendum was, "Vote YES for a greener Scotland". Flyers and posters highlighted the potential for green energy in an independent Scotland and asserting that the decarbonization of Scottish electricity production was being curtailed by Westminster.

More recently in 2019, the SNP government declared a "climate emergency". The party set a target of net zero greenhouse gas emissions by 2045 and established a Climate Justice Fund in 2012 (Tokar 2014), investing heavily in offshore wind farms. These policy developments are instances of the frame bridging between environmental and autonomy issues going beyond the discursive regime; the green nationalism of the SNP has evolved into green nation building. As Royles and McEwen, 2015 (2015:1050) write, the SNP's government has developed "the most successful and ambitious renewable energy programme in the United Kingdom, despit e energy being a reserved matter." Similarly, a 19th century Romantic enchantment with the Highlands has been revived with highland "rewilding" (Brown et al., 2011) and planting 22 million new trees in order to return to the "natural" state of Scotland. This is part of a political evolution in Scottish nationalism. While Walter Scott's popular works fused the wild landscapes of the highlands with turbulent histories and romantic traditions into powerful patriotic narratives, contemporary SNP discourse has moved from convervationism to ecologism, combining combines traditional nationalist concerns for the homeland's rivers, forests and mountains with more contemporary, climate-focused environmental policies.

The assemblage between ecological and autonomy issues can even be extended to other topics, as is the case in one of the SNP's posters during the United Kingdom EU referendum in 2016, known colloquially as "Brexit" (see **Figures 3**,**4**). This is a clear instance of minority nationalist frame bridging, where political actors seek to connect seemingly disparate issues discursively such as EU support, Scottish nationalism, and ecologism.

In the poster shown in **Figure 4**, an image of the Scottish Highlands covered with wind turbines evokes a link between (national) territory and climate-friendly policies, in this case renewable energy. The text, "The EU is good for our environment" highlights not only environmental concerns, but support for European integration, and indeed uses climate policies in an attempt to bolster support for the EU. This could be seen as an instance of "frame bridging", as the posters seeks to link "two or more ideologically congruent but structurally unconnected frames regarding a particular issue or

FIGURE 3 | Vote Remain, SNP. Scottish Political Archive, University of Stirling.

problem" (Snow et al., 1986:467). This instrumental use of the EU is characteristic of SNP Euro-engagement (see Hau 2019), and here it is used in synergy with support for climate protection. However, the poster also manages to connect earlier Romantic ideas of the rural Highlands as filled with magic, Celtic mystique, and authenticity with contemporary issues in Scottish politics such as energy decarbonization. In this way, earlier concerns for the local environment gives way to a more modern, green policy position that elevates environmentalism from a local problem to a global issue.

Catalonia and the Republican Left of Catalonia

In Catalonia, there has been a similar yet distinct evolution in the relationship between minority nationalism and environmentalism. **Figure 4** shows a 1931 poster produced by the German-born Jewish designer Fritz Lewy, highlighting early Catalanist environmental concerns. The Catalan Forestry Service, *el Servei Forestal*, had been established in 1931 by ERC's founder, Francesc Macià, and was pioneering in ecological conservation in Spain.

The poster, titled 'Without trees, there is neither industry or work', highlights the need for the preservation of Catalan forests to safeguard industrial production and jobs, which were key political themes in the 1930s. The environmental concern for Catalan forests appears rather instrumental, as the viewer is encouraged to see tree trunks as future factory chimneys, but the desired outcome is the preservation of Catalonia's woodland. Workers, peasants and the middle classes felt that they were represented by Marcià, considered the "grandfather" of modern Catalan nationalism (DiGiacomo 1987:162). He was a master of public imagery, and this poster is no exception, linking contemporary important issues of work for all, industrial production and concern for the local environment, which all speak to the ERC's self-understanding as a progressive, left of center political party. The purpose was "to conserve and improve Catalonia"s forest wealth, the creation of natural parks, and the conservation and service of hunting grounds and fishing lots" (Nogué and Wilbrand 2018: 445). In this narrative, natural resources such as forests, rivers and parks are a *national* concern, pertaining to all inhabitants of the (national) territory, rather than merely the concern of local landlords and homeowners. A similar process of "scenic nationalism" occurred in the United States with the establishment of

FIGURE 4 | 'Sense arbres no hi ha industria', Servei Forestal de Catalunya. Pavelló de la República CRAI Library, Universitat de Barcelona.

National Parks (rather than natural parks) as a way to foster popular appreciation of the national magnificence (Mitchell 2017; Runte 1997).

The link between territory, environment, autonomy and welfare policies was a mainstay in Catalan politics during the 1930s, and the ERC made extensive use of Catalan rural imagery to promote their political project for regional welfare and Catalan autonomy (DiGiacomo 1987:163). This particular form of "green nation building" reached its height during the ERC's tenure in government and was discontinued under the Francoist dictatorship following the Spanish Civil War (Paül i Carril 2004: 42), as the regime followed a policy of aggressive economic growth, *el desarrollismo* (Conversi 1997:219). It therefore is a particular feature of Catalan nationalism, but not its Spanish counterpart.

Fifty years later, after the Francoist hiatus, this assemblage returned. In the 1980 Spanish general elections, the ERC's main poster also attempted to connect rural Catalan imagery and ideas of better times before the dictatorship with support for the ERC's center-left policies and autonomy agenda (see **Figure 5**).

The poster represents rural idyll; wheat in the fields, flowers and fruit trees, a content farmer leaning on his pitchfork next to a charming, red-tiled cottage while birds fly above a full rainbow

and a red sun rising over the hills. As DiGiacomo (1987:163) puts it, "The only concession to the passage of time is the SEAT 600 (the Spanish equivalent of the *Volkswagen*) parked near the fruit trees." The text below reads, "*To move forward: Vote Esquerra Republicana De Catalunya. The decisive vote, the useful vote*."

While the image is rural nostalgia distilled, the text instead implies progress and utility, framing ERC as a bridge between past and future. The romantic emphasis on rural nostalgia and a connection between the people and the land is common in nationalist discourse. However, in Catalonia and other minority nations, it seemingly merged into a distinct concern for environmental issues. Today's principal pro-independence force, ERC, seek to continue this line, frame bridging between the fight for Catalan autonomy and climate change. In the large policy manifesto, "The republic we'll create/*La republica que farem*", launched in 2018, ERC outlined five key policy areas for the proposed future Catalan Republic. Number four was called "Territory and Sustainability", explicitly highlighting the link between (national) territory and environmentalism that ERC seek to create:

> "On a planet where natural resources are finite and climate change is a fact, the [Catalan] Republic will have the duty and responsibility to change towards a sustainable model of production and responsible consumption that guarantees the needs of future generations. (. . .) Given the situation of the energy sector in the Spanish system, it is necessary to take the commitment to renewable energy seriously, as it will not otherwise move forward. The Republic is the opportunity to do so." (ERC 2018)

The brief goes on to list the environmental benefits of an independent Catalonia in terms of environmental protections, water conservation, renewable energy, an ambitious plan for zero emissions, and the establishment of new regulatory and advisory bodies in the Catalan administration in charge of sustainability and climate. Just as ERC did in 1931 and 1980, the party mobilizes in favour of independence through a focus on preserving and strengthening the national territory, or green nation building. There is then a blurring of national and natural concerns in ERC discourse that speaks to a profound—and electorally successful—frame bridging between these two issues. As the 2018 manifesto also shows, the Catalan nationalist discourse of ERC has changed from an earlier concern with preservation of local forests, rivers, and fields to become yet another weapon in the arsenal of reasons for independence. Climate change is framed as a global phenomenon that Catalonia can only tackle with independence, as ERC outlines a Catalan republic with greener ambitious than Spain.

Marcet and Argelaguet (2003) note that the ERC's eco-friendly stance is cemented by the party's internal statutes: Article 1 states that the party is "a democratic and non-dogmatic left-wing party whose references are the defence of the environment, human rights and the rights of national communities".[4] In the regional Catalan parliament, the ERC have attempted to put this discourse into practice. Efforts include a bill recently approved by the Catalan Parliament, *Llei 16/2017, del canvi climátic*.[5] Although the Catalan "climate emergency bill" was similar to the aforementioned Scottish legislation, it went even further, banning fracking and planning a closure of all nuclear facilities by 2027 and a minimum reduction of CO_2 emissions of 27 per cent by 2030. Playing right into the ERC's framing of Spain preventing Catalonia from realizing its ambitious green policies however, the conservative PP (*Partido Popular*), then in power, took the legal reforms the Spanish Supreme Court (TS, *Tribunal Supremo*), the highest court in Spain. The Spanish Supreme Court ruled that such measures were unconstitutional as they exceeded the competencies normally held by Autonomous Communities according to the 1978 Spanish Constitution.

Environmental concerns have become increasingly linked to territorial politics in Spain, with the Catalan independence parties' green agenda being contested by the Spanish state on

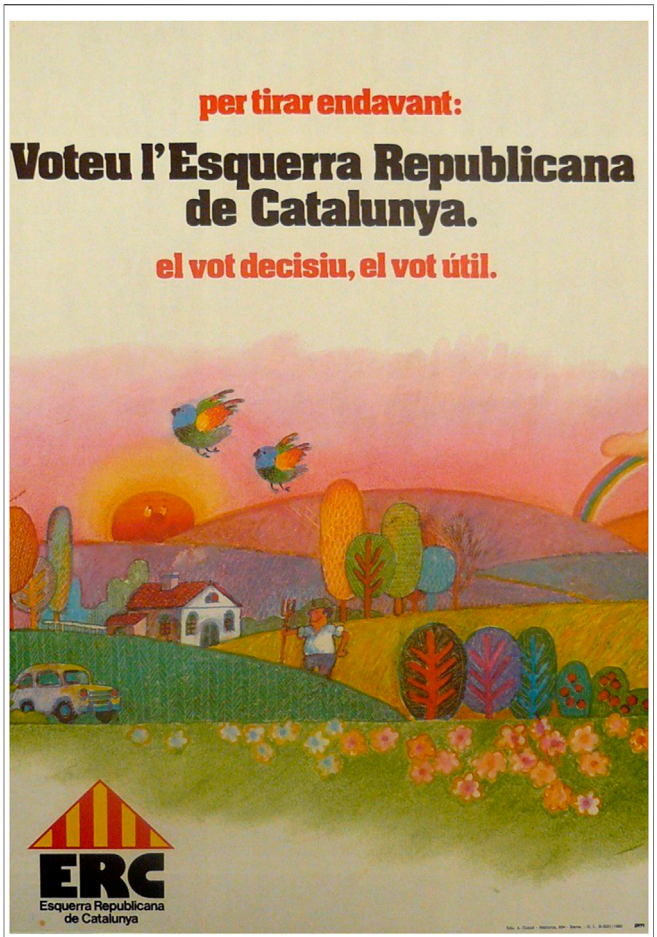

FIGURE 5 | 'Per tirar endavant', Esquerra Republicana de Catalunya. Fundació Josep Irla Arxiu.

[4]Estatuts de Esquerra Republicana de Catalunya, www.esquerra.cat/arxius/textosbasics/estatuts.pdf.

[5]Diario Oficial de la Generalitat de Catalunya no. 7426, 3 August 2017.

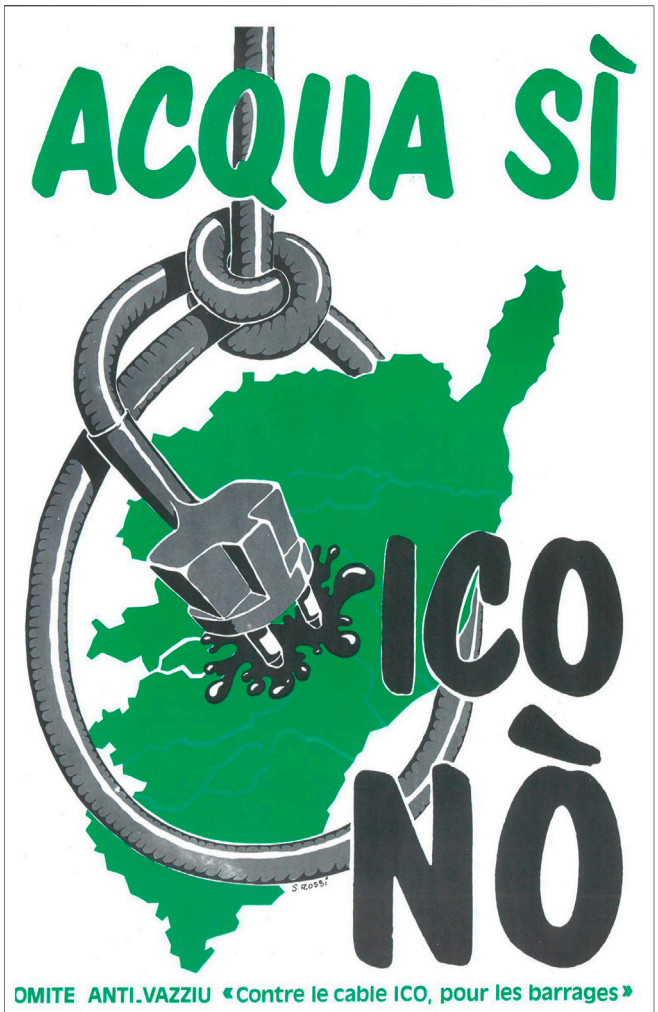

FIGURE 6 | 'Acqua sì, ICO nò', Comite Anti-Vazziu. European Free Alliance.

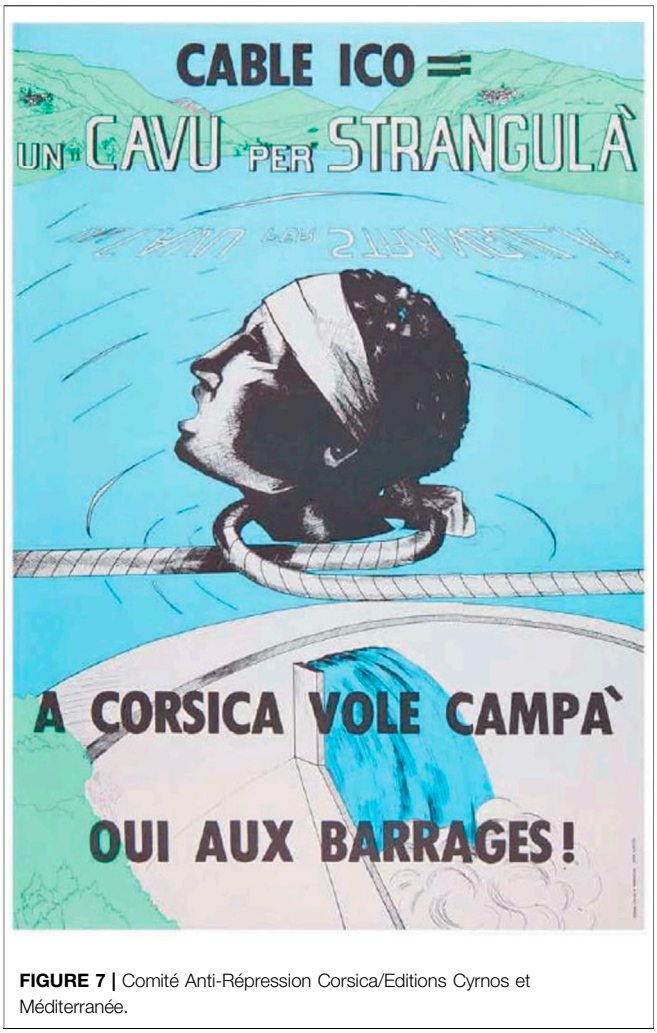

FIGURE 7 | Comité Anti-Répression Corsica/Editions Cyrnos et Méditerranée.

territorial grounds as "unconstitutional" with little regard for the actual benefits of these policies. Such decisions have inadvertently legitimized ERC framing of climate change as a territorial-political issue, strengthening their frame bridging between autonomy and environmentalism. This has led the ERC to be at the forefront of climate action in Spain with traditionally strong views on ecological issues (Marshall 1996). Through such extensive frame bridging, minority nationalist parties such as the ERC link concern with the (national) environment to both supranational values, such as human rights, and a core traditional concern for territorial autonomy.

Corsica and for Corsica

In other minority national posters, such as this early 1980s poster from Corsica, traditionally nationalist imagery of the logo-map (cf. Benedict Anderson 1991) is combined with ecological concerns (see **Figure 6**).

The poster, titled "Yes to water, no to ICO", advocates in favor of hydroelectric energy instead of the ICO, *Italie Corse* nuclear cable. It was created as part of the nationalist Corsican mobilization resistance against the Vazziu-Ajaccio thermal and oil power plant. Corsican nationalism has historically been intricately linked with environmentalism. As de Winter and Tursan (2003) write, the Corsican nationalist anti-nuclear and anti-oil groups, who also held an international demonstration against pollution in the Mediterranean in 1973, coupled ecological concerns with demands for autonomy. They outlined Corsica as a geographic entity whose identity was threatened, and this gave the fight against nuclear power, toxic waste, and whale beachings in Corsica a distinctly *national* character. According to de la Calle and Fazi (2010), the Corsican nationalist movement introduced "postmaterialist" issues such as environmentalism to the political agenda and attracted many young voters to the cause. Indeed, since this link was established by sub-state actors in the 1970s, "environmentalist and Corsists claims have never been separated" (de Winter and Tursan 2003:176), with environmental politics on the island being tightly linked to nationalist movements (De la Calle and Fazi, 2015). This is evidenced by Corsican MEP and former EFA President

François Alfonsi's political start in this ecological-nationalist movement. He co-founded the "Comité Anti-Vaziu", the main NGO opposing the installation of heavy oil thermal power plants in Corsica in the late 1970s.

Another Corsican protest poster is even more explicit in its blending of nationalist and environmentalist message and imagery (**Figure 7**).

This poster shows a dark figure with a white bandana, the flag and coat of arms of the island, being strangled in the water by a cable next to a hydroelectric dam. In Corsican and French, the poster reads: "*A cable meant to strangle. Corsica wants to live. Yes to dams!*" The poster mobilizes potent nationalism symbolism as the heraldic "Moor's Head" of Corsica is literally strangled, symbolizing the death of the nation. This is aided by the text equating hydroelectric energy (dams) with life and nuclear power with death. It does however maintain a distinctly nationalist message; the nation of Corsica is in danger, rather than a global threat.

Today, however, the Corsican nationalist movement frames its green aspirations differently. In the 2019 manifesto of the *Pè a Corsica* (For Corsica) coalition, the largest sub-state nationalist political party on the island and EFA member[6], one of the main policy goals reads:

> "To respond to climate change through an ecological and social transition, creating wealth and well-being." (For Corsica 2019)

The nationalist movement still frame environmental policies as linked to autonomy, as it is asserted Corsica cannot undertake a green energy shift without increased competencies, but the emphasis is on climate change as a global challenge with local solutions, quite distinct from the local conservation efforts of the 1970s.

Galicia and the Galician National Bloc

Other minority nationalist posters make similar connections between ecology and demands for autonomy. One of the most striking—and arguably most successful—examples is the Galician campaign and NGO "*Plataforma Nunca Máis*" ("Never Again Platform") characteristic 2002 poster (see **Figure 8**). The poster protests and commemorates the major environmental disaster known as the Prestige oil spill off the coast of Galicia in 2002. The Prestige oil spill polluted thousands of kilometers of coastline with 60.000 tons of heavy fuel oil, irreversibly harming local marine- and wildlife and crippling the Galician fishing industry.

Formed by a myriad of associations following, the *Nunca Máis* platform is closely related to the BNG. The poster's designer, Xosé María Torné, has worked on several BNG campaign posters, and the platform website www.plataformanuncamais.org is registered and maintained by BNG personnel. The poster is austere, with stark white lettering on a black background spelling *"Never Again"*. The diagonal blue line evokes the national flag of Galicia, but the background color is inverted from white to black, symbolizing sorrow. In this way, the potent national symbol of the Galician flag is turned on its head, from symbolizing pride and community to gravity and despair. As with other campaign posters mentioned in this article, it evokes a linkage between environment, territory and the nation by its use of one of the most potent national symbols, the flag. The slogan has become well known across Spain and was re-used in the fight against forest fires in Galicia in 2006, as well as by the BNG in a campaign honouring the Galician victims of Francoism in 2018, showing its versatility as both an ecological message and a more territorially political one. In the BNG's 2017 Statute of Principles, the "modern" EFA frame bridging between environmentalism and autonomy that outlines climate change as a global phenomenon with local solutions is evident:

FIGURE 8 | Plataforma Nunca Máis/Xosé María Torné.

> "The BNG is a force actively committed to the defense of the environment and territory and champions policies in accordance with principles of sustainability in order to safeguard the planet" (BNG 2017:19)

Concretely, the BNG has proposed a Galician law against the climate crisis, including the protection of the landscape and ecosystems and addressing issues of mobility, waste, energy, mining and water management. The party has also called for the creation of a crisis cabinet to act on the climate emergency (*emerxencia climática*) (Europa press, 2019) and party leaders have railed against what they term "apostles of climate emergency denial" such as United States president Donald Trump or Brazilian leader Jair Bolsonaro (20 Minutos 2019).

Discussion: EFA and Climate Change

Instead of simply promoting local conservationist concerns, EFA parties now campaign for sustainable energy production in their regions, and for climate-friendly policies in their regions, in majority states, and in the EU. The parties continuously seek to integrate a climate agenda with autonomy issues, and through such extensive frame bridging, EFA parties are able to combine a modern focus on renewables with earlier concerns for the local environment and the

[6]Through *Femu a Corsica*/We make Corsica.

historically prominent anti-nuclear position of most EFA parties. This is evident by the mass demonstrations in the Basque Country against the nuclear power plant in Lemóniz 1977, where Basque nationalists leftists or *abertzale* spearheaded mobilization efforts and even led terrorist attacks against the installation (see Conversi 1997). In a similar, but more peaceful vein, the SNP still campaign against the Trident United Kingdom nuclear submarine depot based at Clyde on the west coast of Scotland, in addition to their more contemporary support for windmills as an attempt to form a political continuity. As other scholars have noted, such political parallelisms and frame bridging allow minority nationalist parties to symbolically and rhetorically link contemporary environmental action with earlier efforts (Brown 2017b). Despite this apparent continuity in minority nationalist support for green policies, however, there has been a significant change in how these parties frame environmental issues. Where earlier initiatives focused on preservation of local territory, EFA parties now outline climate change as a global challenge that requires local solutions, which they can only provide with increased autonomy.

The reasons for this minority nationalist assemblage between autonomy and environment are manifold, and the phenomenon has long roots (Keating 1996). It is largely connected to the social-democratic core of many sub-state nationalist parties and the alliances they have built with environmental groups, green parties, and other progressive social movements, such as that between the EFA and the European Greens (Keating and McCrone 2013). EFA parties appear to have taken up green, progressive policy positions in addition, rather than in opposition, to their original territorial demands. Holtz-Bacha and Johansson (2017) also count EFA "progressive regionalists" as part of the ideological "Green" family. Indeed, membership of EFA implies a more articulated world vision: beyond being simply undifferentiated "ethno-regionalist" parties, EFA members see themselves principally left-of-center social democratic parties, not just as members of a "minority nationalist fringe". They are complex political parties with specific policy packages, combining their core demands for autonomy or territorial restricting with center-left, progressive policies.

This assemblage allowed minority nationalists parties such as the ERC, SNP, We make Corsica/For Corsica, and BNG to symbolically link contemporary environmental action with more traditional nationalist tropes of mountains, rivers and forests in the ancestral soil, focusing on preservation and environmental protection. Today, however, this frame bridging has acquired its own internal dynamic and is used as part of a "green nation building" where local responses to global climate change are championed as one of the prime reasons for increased autonomy or independence. Being able to show themselves as more environmentally ambitious than their majority nation counterparts enables sub-state nationalist governments to draw boundaries to central governments and distinguish themselves as more progressive (see Nash 2020). This policy assemblage is increasingly becoming part of these substate movements' self-understanding and "negotiated nationalism" (Hau 2019), as autonomy movements argue in favor of self-determination in order to enact progressive politics. This means environmental action is increasingly used as a form of green nation-building in European minority nations, with important consequences for identity construction in these territories.

CONCLUSION

This article explores the concept of "green nationalism" that has emerged among sub-state nationalist movements in Europe (Conversi and Hau 2021). Although sub-state nationalist movements have a long-standing pedigree when it comes to protecting (local) territory, there has been a shift from preservationist initiatives of the 1970s to policies combating climate change as a global phenomenon in the 2010s. The underpinning rhetoric is similar in that it fuses a traditional nationalist focus on territory and belonging with the progressive political stance of most contemporary autonomist and pro-independence movements, although there has been a significant shift in the framing of climate change as a global, universal issue that requires local solutions.

This green nationalism appears to be electorally successful and politically viable. Both Scotland and Catalonia now have devolved parliaments with a majority in favor of independence and SNP and ERC in government, and since For Corsica won the first Corsican nationalist win in a French election in 2015, there has been a parliament majority in favor of increased autonomy on the island. Similarly, the BNG increased their representation in the Parliament of Galicia by 13 seats in the latest 2020 regional elections. The current electoral success of these parties depends on multiple factors, one of which is their ability to fuse a socially progressive, social democratic, green agenda with (minority) nationalism. This green nationalism has its own internal dynamics that leads to increasing connection between these two issues in minority nations, which may expand in the future as party competition over "green issues" increases. This is especially the case when parties engage in "green nation-building" where environmental action evolves into a crucial element of the sub-state nationalist movements" identity construction in competition with the majority state and central government Nacionalista Gallego, 2017; Catalunya, 2020; Derviş, 2020, Held, 2004; Scottish Parliament, 2018, Planeta, 2019; Scottish National Party, 2016; Scottish Renewables, 2017.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/Supplementary Material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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REFERENCES

20 minutos, 2019 20 minutos (2019). *El BNG pide el voto a los jóvenes preocupados por el cambio climático que "no quieren Trumps ni Bolsonaros*. www.20minutos.es - Últimas Noticias, Available From: https://www.20minutos.es/noticia/4044850/0/el-bng-pide-el-voto-a-los-jovenes-preocupados-por-el-cambio-climatico-que-no-quieren-trumps-ni-bolsonaros/.

Althusser, L. (1971). "Ideology and Ideological State Apparatuses," in *Lenin and Philosophy and Other Essays*. Editor B. Brewster (Trans.) (New York: Monthly Review Press). Available From: https://www.marxists.org/reference/archive/althusser/1970/ideology.htm.

Archibugi, D., Koenig-Archibugi, M., and Marchetti, R. (2011). *Global Democracy: Normative and Empirical Perspectives*. Cambridge: Cambridge University Press.

Barthes, R. (2009). *Elements of Semiology*. New York: Farrar, Straus and Giroux.

Boucher, G., and Watson, I. (2017). Introduction to a Visual Sociology of Smaller Nations in Europe. *Vis. Stud.* 32 (3), 205–211. doi:10.1080/1472586X.2017.1365462

Braun, M. (2021). Why Nationalism Is Not the Right Doctrine to Combat Climate Change - A Central European Perspective. *New Perspect.* 29 (2), 197–201. doi:10.1177/2336825X211009107

Brown, A. (2017a). *EU Environmental Policies in Subnational Regions: The Case of Scotland and Bavaria*. London: Routledge.

Brown, A. (2017b). The Dynamics of Frame-Bridging: Exploring the Nuclear Discourse in Scotland. *Scottish Aff.* 26 (2), 194–211. doi:10.3366/scot.2017.0178

Brown, C., McMorran, R., and Price, M. F. (2011). Rewilding - A New Paradigm for Nature Conservation in Scotland? *Scottish Geographical J.* 127 (4), 288–314. doi:10.1080/14702541.2012.666261

Castells, M. (2011). *The Power of Identity*. John Wiley & Sons.

Catalunya, P. de. (2020). *El Ple aprova la modificació de la Llei del canvi climàtic per gravar els vehicles més contaminants*. Parlament de Catalunya. Available From: https://www.parlament.cat/web/actualitat/noticies/index.html?p_format=D&p_id=270371155.

Conversi, D., and Ezeizabarrena, X. (2019). "Autonomous Communities and Environmental Law: The Basque Case," in *Minority Self-Government in Europe and the Middle East*. Editors O. Akbulut and E. Aktoprak (Leiden, Boston: Brill–Nijhoff), 106–130.

Conversi, D., and Friis Hau, M. (2021). Green Nationalism. Climate Action and Environmentalism in Left Nationalist Parties. *Environ. Polit.* 30 (7), 1089–1110. doi:10.1080/09644016.2021.1907096

Conversi, D., and Jeram, S. (2017). Despite the Crisis: The Resilience of Intercultural Nationalism in Catalonia. *Int. Migr* 55 (2), 53–67. doi:10.1111/imig.12323

Conversi, D. (1997). *The Basques, the Catalans, and Spain: Alternative Routes to Nationalist Mobilisation*. London: Hurst and Company Publishers. Available From: https://www.academia.edu/1431872/The_Basques_the_Catalans_and_Spain_alternative_routes_to_nationalist_mobilisation.

Conversi, D. (2020). The Ultimate Challenge: Nationalism and Climate Change. *Nationalities Pap.* 48 (4), 625–636. doi:10.1017/nps.2020.18

Corsica, Pè. a. (2019). *Un paese da fà! Accordu strategicu "Pè a Corsica*. Available From: https://www.femuacorsica.corsica/wp-content/uploads/2019/12/accord-strategique-pe-a-corsica-1-converti.pdf.

Culla, J. B. (2013). *Esquerra Republicana de Catalunya 1931-2012: Una història política*. Barcelona: La Campana.

Cusack, T. (2001). A 'Countryside Bright with Cosy Homesteads': Irish Nationalism and the Cottage Landscape. *Natl. Identities* 3 (3), 221–238. doi:10.1080/14608940120086885

de la Calle, L., and Fazi, A. (2010). Making Nationalists Out of Frenchmen?: Substate Nationalism in Corsica. *Nationalism Ethnic Polit.* 16 (3–4), 397–419. doi:10.1080/13537113.2010.527228

Derviş, K. (2020). *When Climate Activism and Nationalism Collide*. Brookings. Available From: https://www.brookings.edu/opinions/when-climate-activism-and-nationalism-collide/ (Accessed 10 15, 2021).

DiGiacomo, S. M. (1987). "La Caseta I l'Hortet": Rural Imagery in Catalan Urban Politics. *Anthropological Q.* 60 (4), 160–166. doi:10.2307/3317655

Doerr, N. (2017). How Right-wing versus Cosmopolitan Political Actors Mobilize and Translate Images of Immigrants in Transnational Contexts. *Vis. Commun.* 16 (3), 315–336. doi:10.1177/1470357217702850

Duit, A., Feindt, P. H., and Meadowcroft, J. (2016). Greening Leviathan: The Rise of the Environmental State. *Environ. Polit.* 25 (1), 1–23. doi:10.1080/09644016.2015.1085218

Esman, M. J. (1977). "Scottish Nationalism, North Sea Oil, and the British Response," in *Ethnic Conflict in the Western World*. Editor M. J. Esman (Ithaca, N.Y.: Cornell University Press), 251–286.

Europa Press (2019). *El BNG propone que Galicia tenga un "comité de crisis" y una ley autonómica para hacer frente al cambio climático*. Europa Press. Available From: https://www.europapress.es/epagro/noticia-bng-propone-galicia-tenga-comite-crisis-ley-autonomica-hacer-frente-cambio-climatico-20190912153154.html.

Forchtner, B., and Kølvraa, C. (2015). The Nature of Nationalism: Populist Radical Right Parties on Countryside and Climate. *Nat. Cult.* 10 (2), 199–224. doi:10.3167/nc.2015.100204

Freeden, M. (2003). *Ideology: A Very Short Introduction*. Oxford: OUP.

Galarraga, I., Gonzalez-Eguino, M., and Markandya, A. (2011). The Role of Regional Governments in Climate Change Policy. *Env. Pol. Gov.* 21 (3), 164–182. doi:10.1002/eet.572

Geise, S. (2017). "Theoretical Perspectives on Visual Political Communication through Election Posters," in *Election Posters Around the Globe: Political Campaigning in the Public Space*. Editors C. Holtz-Bacha and B. Johansson (Springer International Publishing), 13–31. doi:10.1007/978-3-319-32498-2_2

Geise, S., and Vigsø, O. (2017). "Methodological Approaches to the Analysis of Visual Political Communication through Election Posters," in *Election Posters Around the Globe: Political Campaigning in the Public Space*. Editors C. Holtz-Bacha and B. Johansson (Springer International Publishing), 33–52. doi:10.1007/978-3-319-32498-2_3

Giddens, A. (1987). *A Contemporary Critique of Historical Materialism: The Nation-State and Violence*. University of California Press.

Griera, M. (2016). The Governance of Religious Diversity in Stateless Nations: The Case of Catalonia. *Religion, State. Soc.* 44 (1), 13–31. doi:10.1080/09637494.2016.1171576

Guibernau, M. (2013). Secessionism in Catalonia: After Democracy. *Ethnopolitics* 12 (4), 368–393. doi:10.1080/17449057.2013.843245

Halkos, G., and Petrou, K. N. (2018). Assessing Waste Generation Efficiency in EU Regions towards Sustainable Environmental Policies. *Sust. Dev.* 26 (3), 281–301. doi:10.1002/sd.1701

Hau, M. F. (2019). *Negotiating Nationalism: National Identity, Party Ideology, and Ideas of Europe in the Scottish National Party and Esquerra Republicana de Catalunya (PhD Thesis)*. Aarhus: Aarhus University.

H. Bruyninckx, S. Happaerts, and K. Van den Brande (Editors) (2012). *Sustainable Development and Subnational Governments: Policy-Making and Multi-Level Interactions* (Palgrave Macmillan). Available From: http://www.tandfonline.com/doi/abs/10.1080/13597566.2014.920828.

Held, D. (2004). *A Globalizing World?: Culture, Economics, Politics*. London: Routledge.

Hepburn, E. (2011). 'Citizens of the Region': Party Conceptions of Regional Citizenship and Immigrant Integration. *Eur. J. Polit. Res.* 50 (4), 504–529. doi:10.1111/j.1475-6765.2010.01940.x

Hildingsson, R., Kronsell, A., and Khan, J. (2019). The Green State and Industrial Decarbonisation. *Environ. Polit.* 28 (5), 909–928. doi:10.1080/09644016.2018.1488484

Holtz-Bacha, C., and Johansson, B. (2017). "Posters: From Announcements to Campaign Instruments," in *Election Posters Around the Globe: Political Campaigning in the Public Space*. Editors C. Holtz-Bacha and B. Johansson (Springer International Publishing), 1–12. doi:10.1007/978-3-319-32498-2_1

Ichijo, A. (2003). The Uses of History: Anglo-British and Scottish Views of Europe. *Reg. Fed. Stud.* 13 (3), 23–43. doi:10.1080/13597560308559433

Jahn, D. (2014). "The Three Worlds of Environmental Politics. State and Environment", in *State and Environment*. Editors A. Duit (Cambridge, Massachusetts: MIT Press). doi:10.7551/mitpress/9780262027120.003.0004

Jinnah, S. (2011). Climate Change Bandwagoning: The Impacts of Strategic Linkages on Regime Design, Maintenance, and Death. *Glob. Environ. Polit.* 11 (3), 1–9. Available From: https://www.mitpressjournals.org/doi/pdf/10.1162/GLEP_a_00065. doi:10.1162/glep_a_00065

Johnston, H., and Noakes, J. A. (2005). *Frames of Protest: Social Movements and the Framing Perspective*. Lanham, Maryland: Rowman & Littlefield Publishers.

Jones, R., and Merriman, P. (2009). Hot, Banal and Everyday Nationalism: Bilingual Road Signs in Wales. *Polit. Geogr.* 28 (3), 164–173. doi:10.1016/j.polgeo.2009.03.002

Keating, M. (2004). European Integration and the Nationalities Question. *Polit. Soc.* 32 (3), 367–388. doi:10.1177/0032329204267295

Keating, M., and McCrone, D. (2013). "The Crisis of Social Democracy," in *The Crisis of Social Democracy in Europe*. Editors M. Keating and D. McCrone (Edinburgh: Edinburgh University Press), 1–13. doi:10.3366/edinburgh/9780748665822.003.0001

Keating, M. (1996). *Nations against the State: The New Politics of Nationalism in Quebec, Catalonia and Scotland*. Basingstoke, UK: Palgrave Macmillan.

Kress, G., and Leeuwen, T. van. (2006). *Reading Images: The Grammar of Visual Design*. 2e éd. London: Routledge.

Kulin, J., Johansson Sevä, I., and Dunlap, R. E. (2021). Nationalist Ideology, Rightwing Populism, and Public Views about Climate Change in Europe. *Environ. Polit.* 0 (0), 1–24. doi:10.1080/09644016.2021.1898879

L. de Winter and H. Tursan (Editors) (2003). *Regionalist Parties in Western Europe* (London: Routledge).

López-Bao, J. V., and Margalida, A. (2018). Slow Transposition of European Environmental Policies. *Nat. Ecol. Evol.* 2 (6), 914. doi:10.1038/s41559-018-0565-8

Lynch, P. (2009). From Social Democracy Back to No Ideology?-The Scottish National Party and Ideological Change in a Multi-Level Electoral Setting. *Reg. Fed. Stud.* 19 (4–5), 619–637. doi:10.1080/13597560903310402

Malešević, S. A. (2019). *Grounded Nationalisms: A Sociological Analysis*. Cambridge: Cambridge University Press.

Marcet, J., and Argelaguet, J. (2003). "Nationalist Parties in Catalonia. Convergència Democràtica de Catalunya and Esquerra Republicana," in *Regionalist Parties in Western Europe*. Editors L. de Winter and H. Tursan (London: Routledge).

Marshall, T. (1996). Catalan Nationalism, the Catalan Government and the Environment. *Environ. Polit.* 5 (3), 542–550. doi:10.1080/09644019608414288

Martínez Lirola, M. (2016). Multimodal Analysis of a Sample of Political Posters in Ireland during and after the Celtic Tiger. *Rev. Signos* 49 (91), 245–267. doi:10.4067/S0718-09342016000200005

McCrone, D. (1998). *The Sociology of Nationalism*. London: Routledge.

Mitchell, J., Bennie, L., and Johns, R. (2012). *The Scottish National Party: Transition to Power*. Oxford: OUP.

Murphy, A. B. (2010). Identity and Territory. *Geopolitics* 15 (4), 769–772. doi:10.1080/14650041003717525

Nacionalista Gallego, B. (2017). *En Bloque Cara a Un Tempo Novo*. XVI Asemblea Nacional do BNG. Available From: https://nube.bng.gal/owncloud/index.php/s/H6lnOwma8tw6qMu.

Nash, S. L. (2020). 'Anything Westminster Can Do We Can Do Better': the Scottish Climate Change Act and Placing a Sub-state Nation on the International Stage. *Environ. Polit.* 30 (0), 1024–1044. doi:10.1080/09644016.2020.1846957

Nogué, J., and Wilbrand, S. M. (2018). Landscape Identities in Catalonia. *Landscape Res.* 43 (3), 443–454. doi:10.1080/01426397.2017.1305344

Patten, A. (2010). "The Most Natural State": Herder and Nationalism. *Hist. Polit. Thought* 31 (4), 657–689.

Paül i Carril, V. (2004). "The Search for Sustainability in Rural Periurban Landscapes: The Case of la Vall Baixa (Baix Llobregat, Catalonia, Spain)," in *International Geographical Union. Managing the Environment for Rural Sustainability. Commission on the Sustainability of Rural Systems*. Editors E. Makhanya and C. Bryant (Montréal: International Geographical Union).

Peirce, C. S. (1940). *Philosophical Writings of Peirce*. London: K. Paul, Trench, Trubner & Co.

Planeta, M. (2019). *El Constitucional tomba la Llei Catalana del Canvi Climàtic*. Mon Planeta. Available From: http://elmon.cat/monplaneta/actualitat/constitucional-tomba-llei-catalana-del-canvi-climatic.

Reber, B. H., and Berger, B. K. (2005). Framing Analysis of Activist Rhetoric: How the Sierra Club Succeeds or Fails at Creating Salient Messages. *Public Relations Rev.* 31 (2), 185–195. doi:10.1016/j.pubrev.2005.02.020

Rodríguez-Andrés, R., and Canel, M. J. (2017). "Election Posters in Spain: An Old Genre Surviving New Media," in *Election Posters Around the Globe: Political Campaigning in the Public Space*. Editors C. Holtz-Bacha and B. Johansson (Springer International Publishing), 299–318. doi:10.1007/978-3-319-32498-2_15

Royles, E., and McEwen, N. (2015). Empowered for Action? Capacities and Constraints in Sub-state Government Climate Action in Scotland and Wales. *Environ. Polit.* 24 (6), 1034–1054. doi:10.1080/09644016.2015.1053726

Runte, A. (1997). *National Parks: The American Experience*. Lincoln, Nebraska: University of Nebraska Press.

Scottish National Party (2016). *Europe Is Good for Scotland. Vote Remain*. Edinburgh: Scottish National Party.

Scottish Parliament (20182018). *Forestry and Land Management (Scotland) Act 2018*. (testimony of Expert Participation)Available From: https://www.legislation.gov.uk/asp/2018/8/contents.

Scottish Renewables (2017). *Renewable Energy Facts & Statistics*. Available From: https://www.scottishrenewables.com/our-industry/statistics.

Seidman, S. A. (2008). *Posters, Propaganda, and Persuasion in Election Campaigns Around the World and through History*. Bern: Peter Lang.

Serrano, I. (2013). Just a Matter of Identity? Support for Independence in Catalonia. *Reg. Fed. Stud.* 23 (5), 523–545. doi:10.1080/13597566.2013.775945

Smith, A. D. (1986). State-making and Nation-Building. *States Hist.* 15, 228–263. doi:10.1108/eb055539

Snow, D. A., Rochford, E. B., Worden, S. K., and Benford, R. D. (1986). Frame Alignment Processes, Micromobilization, and Movement Participation. *Am. Sociological Rev.* 51 (4), 464. doi:10.2307/2095581

Sommerer, T., and Lim, S. (2016). The Environmental State as a Model for the World? an Analysis of Policy Repertoires in 37 Countries. *Environ. Polit.* 25 (1), 92–115. doi:10.1080/09644016.2015.1081719

Sörlin, S. (2010). The Articulation of Territory: Landscape and the Constitution of Regional and National Identity. *Norsk Geografisk Tidsskrift - Norwegian J. Geogr.* 53, 103–112. doi:10.1080/00291959950136821

Tokar, B. (2014). "Movements for Climate Justice in the US and Worldwide," in *Routledge Handbook of the Climate Change Movement*. Editors M. Dietz and H. Garrelts (London: Routledge).

Van Tatenhove, J. P. M. (2016). The Environmental State at Sea. *Environ. Polit.* 25 (1), 160–179. doi:10.1080/09644016.2015.1074386

Various authors (2014). *Defining Energy Sovereignty*. Madrid: El Ecologista, Ecologistas En Acción Magazine, 81. Available From: https://odg.cat/wp-content/uploads/2014/08/energy_sovereignty_0.pdf.

Weltman-Aron, B. (2001). *On Other Grounds: Landscape Gardening and Nationalism in Eighteenth-Century England and France*. Albany, New York: SUNY Press.

Wilken, L. (2001). *Enhed I Mangfoldighed? Eurovisioner Og Minoriteter*. Aarhus: Aarhus Universitetsforlag.

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Lessons From Rojava for the Paradigm of Social Ecology

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This essay addresses two related questions raised by the editors of the research topic for "Beyond the Frontiers of Political Science: Is Good Governance Possible in Cataclysmic Times?" In particular, it explores: 1) how we can identify new tools and perspectives from which to address the multiple and mutually reinforcing problems accumulating around climate change; and 2) what institutional alternatives to the nation-state need to be created and empowered to tackle such complex problems. It does so through an in-depth treatment of the paradigm of "social ecology" and the associated political project of "democratic confederalism." It begins with an overview of the argument, first advanced by Murray Bookchin and subsequently adopted and adapted by the imprisoned Kurdish leader Abdullah Öcalan, that building an ecological society requires an assault on hierarchy in all its forms, and the construction of alternative, direct-democratic institutions capable of transcending the system of the capitalist nation-state. It sketches the institutional architecture of popular assemblies central to this project, both emphasizing their potential to contest capitalist social-property relations and hierarchies intrinsic to the nation-state and pointing out some sources of resilience of the existing system. It hones in on the experience of the revolutionary forces in control of the Autonomous Administration of North East Syria (AANES), who have been directly inspired by Öcalan's ideas. It highlights both the AANES's achievements as well as the significant obstacles it has encountered in the attempt to bring into being a radically-egalitarian, ecological society. It concludes by drawing lessons from these difficulties.

Keywords: social ecology, democratic confederalism, Kurdish movement, Rojava, Murray Bookchin, Abdullah Ocalan

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INTRODUCTION

Murray Bookchin first advanced the proposition that the very notion of the domination of humans over nature was rooted in the domination of humans over humans in his 1964 essay, "Ecology and Revolutionary Thought" (Hammy, 2021, p.31). It followed, for Bookchin, that building an ecological society would require an assault on hierarchy in all its forms, and an embrace of a radical, direct-democratic alternative, one capable of confronting and ultimately overcoming the domination and exploitation embodied in the system of the capitalist nation-state. To this end, he would subsequently elaborate a program of communalism, which was conceived to include the concrete political dimension of libertarian municipalism. The paradigm of social ecology, linking the fate of ecological society to that of a revolutionary political project of local direct democracy, operating against and tending towards the transcendence of both capitalism and the nation-state, was thus born.

Decades later, from his lonely prison cell on Imrali island, the leader of the Kurdish Freedom Movement, Abdullah Öcalan, would come across the work of Bookchin and would be duly impressed with what he read. Öcalan would creatively appropriate and incorporate much of the paradigm of social ecology into his own impressive re-articulation of the principle of self-determination, his tactical and strategic reorientation of the movement's aims, away from the pursuit of a Greater Kurdish nation-state, centering instead the struggle for direct democracy against the state, alongside the struggle for ecological sustainability, and the struggle for gender emancipation, as the three main pillars upon which the movement's new program of democratic confederalism is founded (Akkaya and Jongerden, 2012; Gerber and Brincat, 2021; Guneser, 2021).

This paper will explore the social-ecological dimension of the democratic confederal project, in theory and in praxis, with a focus on the challenge that the project presents to both capitalism and the nation-state system. It will begin with a summary overview of the argument, originally advanced by Bookchin and subsequently taken up by Öcalan, that would diagnose hierarchy and domination among humans as the root cause of our ecological crisis. It will then turn to sketch the alternative institutional architecture of local, direct-democratic assemblies, as envisioned and prefigured in the project. It will emphasize how such assemblies have the potential to contest capitalist social-property relations as well as hierarchies intrinsic to the nation-state form, but it will also address some sources of resilience of capitalist and nation-statist hierarchies in response to this democratic-confederalist challenge. To this end, it will hone in on the experience of the revolutionary forces in control of the Autonomous Administration of North Eastern Syria (AANES), who have been directly inspired by the democratic-confederal program as articulated by Öcalan. It will provide a critical assessment of both the AANES's main achievements, as well as the significant obstacles that the AANES has encountered in the attempt to bring into being a radically-egalitarian, ecological society. The paper will conclude by drawing some lessons from the difficulties faced by the AANES in its efforts to construct an anti-hierarchical, ecological alternative to capitalism and to the nation-state, from the bottom up.

Our careful treatment of the democratic-confederal alternative to capitalist modernity, as well as the lessons we draw from the revolutionary praxis in Rojava, are directly relevant to addressing the question: Is good governance possible in cataclysmic times? For if capitalism and the nation-state can plausibly be portrayed as culpable systemic causes of the unfolding climate catastrophe, then prospective alternatives to capitalism and the nation-state certainly deserve our very close and critical attention. Amidst a spiraling, negative dialectic of tyranny and chaos engulfing the so-called Middle East, at the very epicenter of geopolitical machinations and neo-Imperialist conflict, there stands out, as a beacon of hope, the revolutionary experiment underway in Rojava. A critical assessment of its achievements and failures, in relation to the paradigm of social ecology and the program of democratic confederalism, is perhaps long overdue.

The paper is written from a perspective of critical solidarity with the Kurdish Freedom Movement. It is based on a secondary analysis and synthetic assessment of existing social scientific research, but informed by primary analysis from an ongoing engagement with the movement, as well as from some twenty semi-structured interviews conducted with people associated with the movement in Rojava, from the Spring of 2018 and the Fall of 2021. With the movement, the authors share the commitment to the paradigm of social ecology and the program of democratic confederalism. In this respect, our criticisms of both the theory and the praxis of the Rojava revolution differ fundamentally from the assessment advanced by Michiel Leezenberg (2016), with whom we nevertheless converge on some important points. However, Leezenberg's critique ignores two crucial tendencies within the movement to which our analysis is quite sensitive. First, we would highlight Öcalan's emphasis on self-criticism within the movement, an emphasis on the need for a constant struggle, through education and consciousness-raising, which dates back to the 1980's, but which was intensified after the dissolution of the Soviet Union and has constituted a continuing theme in Öcalan's writings, especially since his imprisonment. Öcalan has made a consistent effort to push the Kurdistan Workers' Party (PKK) toward an ever-more radical-democratic stance, to embrace gender equality and people empowerment, by moving beyond the nation-state, nationalism, patriarchy, and authoritarianism within the PKK (e.g., Öcalan, 2011a). Second, we would highlight the corresponding widespread practice of self-criticism within the movement and amongst its supporters, which manifests itself in daily discussions among the cadres themselves, regarding mistakes, obstacles, creeping authoritarianism, and what the correct implementation of democratic confederalism in praxis requires. Likewise, the supporters of the movement, Apocis, who are inspired by Öcalan's writings, have cultivated the custom of expressing their misgivings and criticisms about what really exists. In our view, this self-critical praxis is essential for the movement's vitality, and constitutes a necessary safeguard against the degeneration of theoretical inspiration and revolutionary imagination into rigid, dogmatic mentalities. Our intention is therefore closer to that of Azize Aslan, who ends her in many ways impressive recent investigation into the anti-capitalist economy and contradictions in Rojava with a call for the movement to "continue creating a self-critical revolution" (Aslan, 2021, p. 333).

Indeed, we believe that one of the real strengths of the Kurdish movement is its refusal to be trapped in what it is. The Kurdish movement has always accepted contradiction, in the Hegelian way, in which identity negates itself. This means that the movement has always tried to transcend itself; it has always tried to transcend its own identity. This process has shown itself in the form of self-criticism in the daily practice of the PKK and in the writings of Öcalan. Inspired by this transcendence of identity, our paper aims to express our critique of the identity of the Rojava Revolution (what it is) as opposed to what it ought be (free and democratic society). Through constructive criticism, we try to promote openness instead of dogmatism and rigidity.

THE PARADIGM OF SOCIAL ECOLOGY AND THE PROJECT OF DEMOCRATIC CONFEDERALISM

In *The Ecology of Freedom*, Bookchin would famously contend that "nearly every ecological issue is also a social issue," and that, in fact, "our present-day ecological dislocations have their basic sources in social dislocations" (Bookchin, 2005, p.32). Bookchin would go on to elaborate a relatively sophisticated, though albeit admittedly speculative, metanarrative about the emergence of hierarchy and domination, tracing their origins in order to denaturalize them. According to him, the emergence of hierarchy and domination both precedes and facilitates the foundation of the state and the division of the social order into economic classes. As Fischer has aptly summarized, for Bookchin, "the modern state is the manifestation of hierarchy, which together with capitalism is the source of the contemporary ecological crisis" (2017, p. 238). Furthermore, Bookchin would insist, since, for it to be effective, the struggle against climate catastrophe must entail a struggle against its root causes, this means that such a struggle must attempt simultaneously to transcend both the state and capitalism.

More recently, Öcalan has articulated a very similar line of argument. In his five-volume *Manifesto for a Democratic Civilization*, whose third volume is tellingly titled, in a nod to Bookchin, *The Sociology of Freedom* (2020), Öcalan, too, provides his own rather ambitious sketch of the emergence of hierarchy and domination, and their subsequent development over the course of a 5,000 years history. Like Bookchin, Öcalan argues that "when man began to enslave his brother, he also began to enslave nature" (quoted in Hammy, 2021, p.32). So too, like Bookchin, does Öcalan contend that the rise of hierarchy and domination precedes and paves the way for the emergence of the state and the division of the social order into economic classes. But whereas Bookchin would locate gerontocracy as the first hierarchical form to emerge, for Öcalan the original emergent hierarchical form is alleged to be that of patriarchy. Even so, Öcalan nevertheless concurs with Bookchin that the state and capitalism are quintessentially and intrinsically-interrelated hierarchical systems, both of which must be simultaneously confronted and ultimately overcome for the realization of self-determination and, concomitantly, for the achievement of ecological sustainability.

Likewise, both Bookchin and Öcalan posit a dialectic of domination and resistance, thread like a double-helix across history. They both believe that domination inevitably breeds resistance, and that, indeed, such resistance need not be rendered futile. Accordingly, they elaborate a program and strategy for effectively unravelling hierarchy, among other things, by espousing a prefigurative politics that they think will prove capable of consistently contesting both the state and capitalism. This is the program that Bookchin came to label "libertarian municipalism," and that Öcalan, in turn, prefers to call "democratic confederalism."

It would, of course, be a mistake, to assimilate Öcalan's thought to that of Bookchin, or even to exaggerate Bookchin's formative influence upon Öcalan's "paradigm shift." For indeed, as Cihad Hammy has elsewhere insisted, the emergence of ecological consciousness and even the anti-statist turn in Öcalan's thought can be traced back to the early 1990's, well before his encounter with Bookchin's works (2021). What's more, before reading Bookchin's *The Ecology of Freedom*, Öcalan had already articulated, in his book, *The Roots of Civilization*, a dialectic of resistance and domination in reading history which is in some ways strikingly similar to Bookchin's legacy of freedom and domination (2007). However, in that book, Öcalan deeply examined the legacy of freedom in the Middle East region, with a particular emphasis on the legacy of libertarian traditions in Islam. Recognition of the existence of such a legacy is completely absent from Bookchin's unabashedly Eurocentric account of the "universal" legacy of freedom.

More specifically, Öcalan has gone to great lengths to unearth and revive libertarian and communal traditions in the Middle East in general and in Kurdistan in particular, in order to pave the way for the possibility of applying "democratic confederalism" in the region. These efforts have been concretized in the last two volumes of his five-volume *Manifesto for a Democratic Civilization*, entitled *The Civilizational Crisis in the Middle East and the Democratic Civilization Solution* (2016b) and *The Manifesto of the Kurdistan Revolution* (2017), respectively. In these volumes, Öcalan defines the history of civilization in the Middle East as the history of counterrevolution, a counterrevolution against all those who are excluded from the civilizational system. It is a counterrevolution against women, the youth, the agrarian and village society, the tribes, the nomads, Sufism, the Batiniyya and other religious minorities in the region (Öcalan, 2016b, p.75). Against this counterrevolution, Öcalan aims to revive, and democratize, the legacy of resistance and rebellion of the "elements of democratic civilization," in a democratic confederalist model, opposed to the model of the nation-state, since the nation-state seeks to assimilate and eradicate the ethnic and religious diversity of the region.

Despite this important difference in emphasis, there nevertheless remains a clear, even uncanny, convergence between Bookchin and Öcalan, both with respect to the scope and content of their overarching metanarratives about the dialectic of domination and resistance, unfolding across thousands of years of history, as well as about the political program or approach of "libertarian municipalism" or "democratic confederalism" which the two thinkers similarly elaborate and embrace.

The core institutional embodiment of this approach is the call for the construction of direct-democratic, citizens' assemblies, to be "organized around neighborhoods, villages, and towns" (Fischer, 2017, p.240). Bookchin advocated such popular assemblies as sites for cultivating, indeed, resuscitating, the long-lost arts of democratic debate and collective decision-making (1992, p.249–251). The promotion of participation in these popular assemblies, he hoped, could help trigger the transformation of people's consciousness, facilitating their conversion from passive spectators into active citizens. Öcalan, too, puts a lot of faith in the potential for popular assemblies to help bring about nothing short of a revolution in consciousness. Moreover, he advocates the organization and coordination of

such popular assemblies across multiple scales—envisioning a "dynamic democratic process that extends from local communities in villages and towns, through city councils and city administrations, to a general people's congress" (2010, p.462; see also Knapp and Jongerden, 2014, p.92).

Likewise, Bookchin foresaw a scenario in which a myriad of local-level popular assemblies could flourish and proliferate, and even come to be knit together in a confederation sufficient in scope to constitute an effective "dual power," one that could pose a serious challenge to the authority and jurisdiction of the state. When that time arrives, he warned, there is bound to surface a serious conflict with the state. A moment of truth, if you will, in which the direct-democratic movement will either be radicalized and rise to the challenge, resolutely facing the consequences of that conflict, including the imperative of organizing for self-defense, or, alternatively, it will come to be compromised and ultimately re-absorbed back into the decadent but still hegemonic social order out of which it had emerged (2015a, p.18).

Öcalan, even moreso, has emphasized the importance of organizing for self-defense. Indeed, he has argued, in no uncertain terms, that "[i]t is imperative that self-defense be established and always be at the ready to defend democratic society" (2020, p.191). To this end, he has built into his articulation of "democratic confederalism" the call for the construction, alongside the popular assemblies, of popular militias, autonomous but coordinated for the purpose of self-defense. His is an openly spartan model of an armed citizenry, or better yet, of a revolutionary people in arms (see also Üstündag, 2016, p.199–200). Importantly, while elaborating the imperative of self-defense, Öcalan warns against "falling into either of two mistakes"—the first, of "entrusting self-defense to the monopolistic order"; the second, "try[ing] to become a power apparatus under the rubric of forming a state to counter the existing state" (2020, p.191).

The challenge this model poses to the state, with its bureaucratic hierarchies and its characteristic claim to a monopoly of legitimate violence, should thus come across as relatively evident, at least on first blush. But what about the challenge this model of social organization poses to capitalist social-property relations? Perhaps this is less evident. Yet a challenge is present, nevertheless. For the local assemblies are envisioned as empowered to oversee the means of production, to render economic motives subordinate to the will of the people, as formed and expressed in the deliberations and decisions of the assemblies. According to this model, economic forces are not to be "nationalized"; rather, they are to be "municipalized," that is, democratized, put at the service of the communities in which they are located. In Bookchin's words: "In a libertarian municipalist society, the assembly would decide the policies of the entire economy. Workers would shed their unique vocational identity and interests, at least as far as the public realm is concerned, and see themselves as citizens in their community. The municipality, through the assembly of its citizens, would control and make the broad decisions for its shops, lay down the policies that they should follow, always working with a civic outlook rather than an occupational one" (in Biehl, 1998, p.161–162).

For his part, Öcalan has conceptualized the economic plank of his democratic confederal project in terms of "economic autonomy" and "communal economy." He argues, in relation to the goal of self-determination, that democratic confederalism implies "reestablishing control over … [the] economy." Economic autonomy, he claims, is "predicated neither on private capitalism nor on state capitalism." Instead, he insists, it is all about democratizing the economy, as well as rendering it compatible with "ecological society." "In economic autonomy," he contends, "there is no room for industry, development, technology, ownership, or rural-urban settlement, that negate ecological and democratic society." And, indeed, he adds, in this model "profit and capital accumulation is minimalized," even if, at the same time, he seeks to reassure, economic autonomy does not reject outright "the market, trade, product variety, competition, and productivity" (2016a, p.47–48; see also Aslan, 2021, p.207–208).

The "municipalized economy," or the "communal economy" and "economic autonomy," can and should be distinguished from the state-socialist objective of nationalization, on the one hand, as well as from workerist alternatives based on the democratization of social relations which focus primarily on the point of production, on the other. Not that either Bookchin or Öcalan objects in principle to workers' councils and cooperative ventures; to the contrary, both have lent explicit support to such efforts to democratize the point of production. Öcalan, for instance, has openly called for the establishment of "communal cooperatives in farming, but also in the water economy and the energy sector" (2011b, p.38). But the point, for both Bookchin and Öcalan, is that all market forces, cooperatized or not, must ultimately be subordinated to the democratic will of the citizenry as formed and expressed in the communes, or popular assemblies. For, as Bookchin has warned, absent a more all-encompassing, territorial basis for the exercise of direct democracy, so-called workerist alternatives can be all too easily incorporated into a competitive, corporate-capitalist modus operandi. This is why, in the last instance, both Bookchin and Öcalan promote and espouse a territorial basis, rather than a productive basis, for self-determination, that is, for the exercise of democratic control.

This model, admittedly, raises many questions about the extent to which it actually implies the transcendence of capitalist social-property relations, as opposed to a mere taming of market excesses. It is, in this vein, certainly indicative that the model does not include the abolition of private property per se. The public/private dichotomy thus remains, in principle, intact. And consequently, the division of the social order into economic classes, which, in turn, brings us back to the question of the role of the state.

Öcalan defines the state as "the unity of power relations through which the general coercion and exploitation of classed society is enabled" (Öcalan, 2015, p. 158). He, furthermore, insists that "[t]he state organization is, at its heart, the collective means of protection of. . . stolen property . . ." (Öcalan, 2015, p. 172). If, following Öcalan, among others, we thus conceive of the state as a set of institutions, one of whose principal purposes is to preserve existing social-property relations, then we should expect the propertied classes to appeal to it in order to fend off any

fundamental threat to their property, should such a threat be posed by the popular assemblies. This is why, as Fischer has pointed out, "in the interest of being able to challenge the power of the state, as well as protecting themselves from state incursions, there would have to be a larger confederal association of communes that enables the construction of workable alternative organizational structures," and that could thus provide "the basis for an oppositional stance against the central authorities" (2017, p.241). But does this not mean, essentially, that to protect itself from the state, the movement would be forced to build its own state of sorts?

Bookchin relies upon a distinction between policy-making and policy implementation in order to defend the idea that the confederal association of communes is fundamentally different in nature from the state (2015b, p.40; see also Fischer, 2017, p.241). According to him, policy-making is to be confined to the realm of the communes themselves, from the bottom up, as it were, whereas the confederal association's role is intended to be limited to policy implementation alone. However, this distinction is ultimately difficult to sustain. What happens if the policies made by different communes directly contradict and come up against one another?

In such instances, and more generally, the neutrality of the administrator turns out to be an impossibility. The administrator upon whom the task of policy implementation is delegated inevitably assumes a policy-making role. Nor is this tendency towards creeping centralization only the case in the legislative domain. It is arguably even more pronounced in the domain of coercive force, where confederal associations intended to coordinate and render effective the organization of self-defense end up in the possession of concentrated power, rendering them in quintessence indistinguishable from the coercive apparatus of the state.

Let us label these twin dangers of centralization the peril of the political administrator and the peril of the military leviathan, respectively. Though, strictly speaking, they are not only dangers, but also necessities for self-determination, understood as democratic control. For self-determination to be effectively exercised, the scope of political authority must be greater than the forces it seeks to control. However, this, in turn, raises the specter of the immense difficulty, if not impossibility, involved in efforts to transcend the state in the name of direct democracy.

In order to successfully confront the state, as well as the corporations and the propertied classes who the state represents, the movement will tend to end up building a counter-state of its own. And when it does this, the so-called principal-agent problem will rear its ugly head. The agents delegated to represent the will of the people will be faced with the temptation of pursuing their own interests instead. Or the interests of particular factions with whom the political counter-elites are themselves organically linked.

FROM THEORY TO PRAXIS IN ROJAVA

Such are some of the dilemmas, the aporias, of the "libertarian municipalist" or "democratic confederal" project in theory. Let us now turn to analyze how they play themselves out in praxis, in one crucial context, that of the north east of Syria, centered in Rojava, where revolutionary forces directly inspired by the prolific writings and political program of Abdullah Öcalan have become hegemonic, managing to fill a vacuum of power caused by the outbreak of the Syrian civil war.

Öcalan had spent close to 2 decades in exile in Syria, before being forced out in 1998, which triggered a sequence of events, the unfolding of an international conspiracy, culminating in his abduction in Kenya on February 15th, 1999, while en route to South Africa (White, 2000, p.185–186; Gunes, 2012, p.134–135; Miley et al., 2018, p.53). He left behind in Syria a committed core of followers, inspired by his teachings, and organically linked to the broader organizational structure of the Kurdistan Workers' Party (PKK), whose core constituency was concentrated in the Kurdish region of Turkey, and whose paramilitary headquarters was located in the Qandil mountains, in the Kurdish region of Iraq. The PKK, of course, had been engaged in an armed conflict with the Turkish state, dating back to the mid-80's (McDowell, 1996; Jongerden and Akkaya, 2016). From the early 90's, however, Öcalan, who remains the nominal head of the PKK to this day, had repeatedly been calling for an end to the armed conflict and the commencement of peace negotiations (White, 2015; Miley et al., 2018).

After his departure and abduction, the followers of Öcalan in Syria faced a climate of fierce repression by the Baathist authorities (Gunter, 2014, p.41; Allsopp, 2015). Nevertheless, they came to organize themselves, principally, in the Democratic Union Party, or PYD, which was founded in 2003, and which began, on the initiative of the PKK, to clandestinely "establish committees to organize and discuss political developments, teach small-group Kurdish-language courses, administer local justice, and address women's issues" (Knapp et al., 2016, p.84). From 2007 forward, the PYD adopted a program of "democratic autonomy," in parallel with the strategic reorientation and reorganization of the broader movement, and therefore with similar developments in the north of Kurdistan, under Turkish rule, in accordance with Öcalan's recommendations. As a core part of this new program, the PYD committed itself to the creation and construction of a set of peoples' councils, which came into being across the main cities of Rojava. Though, as Allsopp and van Wilgenburg have emphasized, under Baath party rule, these new, alternative structures "gained very little attention and did not challenge the pre-existing sub-state social structures directly" (2019, p.90).

However, amidst the polarization provoked by the outbreak of the so-called Arab Spring, and Syria's subsequent descent into civil war, the PYD managed to manoeuvre successfully. It opted for a "third path," siding neither with the increasingly Islamized and armed opposition, nor with the Baath regime. Against this turbulent backdrop, the PYD's council system proved "sufficient to constitute a vibrant structure parallel to the state without being in direct conflict with it" (Knapp et al., 2016, p.85). And indeed, from March of 2011, "the weakening of central governance structures... provided opportunity to seize greater autonomy, and the PYD began expanding its civil organizations and forming

armed groups on the local levels" (Allsopp and van Wilgenburg, 2019, p.90).

Gradually, the PYD and its affiliated armed groups began to "assert control, establishing" a series of "armed checkpoints" across the region. At first, the establishment of these armed checkpoints occurred "in parallel to Syrian government security services and structures" (Allsopp and van Wilgenburg, 2019, p.91). Moreover, their establishment stirred up considerable controversy and conflict with rival Kurdish organizations, aligned with the Barzani clan in control of the Kurdish Regional Government in Iraq.

Then, in July of 2012, the regime decided to redeploy, to retreat from the region, and to concentrate its forces instead in the effort to suppress the uprisings across the corridor running from Aleppo through Damascus. There are two different versions of the regime's withdrawal, each relayed by Schmidinger in his rather meticulous journalistic account. According to one version, the PYD issued an ultimatum to the regime, threatening it with the spectre of opening up another front of conflict should it not retreat; according to another, somehow less becoming to the revolutionary credentials of the forces in charge in Rojava, the PYD came to a secret agreement with the regime, among other things, "guarantee[ing] the security of important military installations" in exchange for the regime's departure (2018, p.91; see also Gunter, 2014, p.110–111; and Leezenberg, 2016, p.681). Either way, once "the Syrian government began its withdrawal. . ., the PYD stepped into the governance void and took over key services and practical administrative duties" (Allsopp and van Wilgenburg, 2019, p.91).

The circumstances in which the revolutionary forces came to power thus differ quite substantially from the scenario of dual power envisioned by Bookchin. For Bookchin foresaw a grassroots movement gaining momentum, growing from the bottom up, progressively raising the consciousness of the citizenry, provoking a conflict with the state. What happened in Rojava, by contrast, was more of a military achievement than anything else, accomplished by cohesive and well-trained armed groups, affiliated with the PYD, who proved able to take advantage of a vacuum of power triggered by a civil war. A civil war, we should add, that it did not provoke, and towards which it did its best to maintain a posture of neutrality.

TOWARDS DIRECT DEMOCRACY?

An opportunity arose, a revolutionary situation perhaps, in which the state effectively vanished, without much in the way of a direct confrontation. But such are not the conditions for self-determination, understood as bottom up democratic control. For the revolutionary citizenry envisioned by Bookchin as the precursor and precondition for the emergence of a situation of dual power was only very incipient, just in gestation, when the revolutionary opportunity provided by state withdrawal presented itself. Consequently, we can say that, in Rojava, the revolutionary situation induced popular mobilization and the consolidation of the popular assemblies or council system, rather than the other way around.

Especially given the initial military basis of the PYD's power, its organization of the popular assemblies has had something of a top down, militarist, and explicitly partisan flavor to it from the outset. In accordance with Mao's dictum, we can conclude, its political power was born from the barrel of a gun, not from the popular demand of a mobilized people, immersed in a direct-democratic culture, possessed of revolutionary consciousness, at least not of the kind that Bookchin had in mind.

It must be mentioned that the hegemony of the PYD is not based on military might alone. Rather, it is based as well on the legacy of activism and mobilization of Syrian Kurds since the 1980s by the PKK. Empowered by Öcalan's philosophy and guidance, the PYD has taken the "third path" during the Syrian revolution, siding with democratic forces, and thus has avoided being trapped either by the Syrian regime or the Syrian opposition, as both share the same mentality in denying Kurdish rights. In fact, the PYD has strategically interpreted the Syrian revolution correctly and contributed to the formation of self-defense units with strong support from its base. What the PYD can be blamed for, as we shall see, is its failure to deliver on its promise to empower people in communal democracy, due to its monopolization of decision-making. This is what we have referred to as the peril of the political administrator, which is in turn related to the PYD's organic links with the "military leviathan," in the form of these self-defense units. According to the principles of democratic confederalism, these units are supposed to be subordinate to the power of the communes, but, as again we shall see, they are not. None of this, however, is meant to deny the great and heroic sacrifices the people of North East Syria have made in order to protect themselves against dictatorship and authoritarian states (the Syrian regime and the Turkish state), and against brutal and inhumane Islamist forces.

Even so, as one of our anonymous reviewers pithily put the point: "the problem is not only that [the revolutionary forces' actions] do not conform to what Bookchin once thought. . . but rather what the historico-social conditions in Kurdistan enforced." Indeed, many of the people close to the movement in Rojava whom we interviewed spoke about geopolitical and historical obstacles that have played a role in preventing communes from reaching their full potential. They emphasized the war situation, the embargo, the fight against IS, and the instability in northeastern Syria that they face on a daily basis. They also pointed out that the relic of the Syrian nation-state remains ingrained in the mentality of many who are active in the institutions of the administration, who still see the administration as a form of the state.

And yet, revolutionary consciousness there was. Amongst a core of cadres, professional revolutionaries, per chance, people whose lives have been entirely dedicated to the movement, many of whom had experience fighting as guerrillas in the PKK's ongoing war against the Turkish state. It is the existence of this core of cadres that helps account for the military superiority of the PYD-affiliated forces, in comparison to nearly any other fighting force in the region. For they are seasoned fighters, blessed with the courage of their convictions. However, at the same time, their highly-disciplined mentality, and status as a revolutionary vanguard,

has introduced a certain performative contradiction into their explicit goal of constructing a democratic confederal society. For, as Cihad Hammy has elsewhere argued, the party to which they belong remains "structured around the system of command and obedience" (2018; see also Leezenberg, 2016, p.685).

In a similar vein, Cinar Salih, who is affiliated with the movement's Al Furat Center for Studies, located in Quamishli, would advance the following criticism: "There is a big difference between the party cadre and the thought cadre. Öcalan relies on the thought cadre for the project and not the party cadre. However, it is very difficult to create such cadres. Unfortunately, most of the cadres we have here are party cadres and not thought cadres" (Interview, November 5, 2021).

Likewise, another person whom we interviewed, Ibram Bozan, a journalist from Kobane and self-described Apoci, would contend: "When this project was put into practice, there were some people—cadres—who intentionally turned this project into rigid slogans. By doing so, they caused serious damage to the project and the philosophy of Öcalan. Some did it intentionally, others out of ignorance. Those who did it intentionally want to have more power and elevate themselves to the rank of a higher level. For example, they would say, 'We do not believe in the law because Öcalan criticized the rigidity of the law'. Under this pretext, they make themselves the law, and they act according to their personal whims. They do not act according to laws or measures. They might say, 'I don't like this person, so he should be excluded.' The excluded person could be without a job and have no place in the administration. And there are many real examples like this. Of course, we cannot make a final judgment about whether the project failed or not. It is true that it has been 10 years, but during these years Rojava has always been under war and danger. There have been constant wars during these years: the attack on Kobani, the occupation of Afrin, Serkanya and Tel Albyad, and the war against IS. There have been some changes. For example, the liberation of women. To put a new project into practice, you need a safe environment. In Rojava, there are many external factors that strongly influence it. The war must be stopped so that we can really see how things will go" (Interview, November 7, 2021).

The People's Defence Units, or YPG, were officially established in 2012, alongside the all-women, Women's Protection Units, or YPJ. These organizations quickly grew, and, according to Allsopp and van Wilgenburg, the YPG was soon transformed, under the direction of the veteran PKK commander, Xebat Derik, into something of "a quasi-state security force." By 2017, the YPG's ranks counted approximately 50,000 soldiers. Though it is controversial to admit as much, it would appear that many of the YPG's units have been "commanded by PKK veterans," who thus provide the organization's "'skeletal' structure. . ., 'fleshed out' by local recruits" (2019, p.65).

The YPG is formally autonomous from the PYD, but it is clearly aligned with the revolution. From the middle of 2014, it would come to be supplemented by Self-Defence Units, created for the purpose of compulsory military service. From 2015, the YPG would form the backbone of a military alliance with other ethnically-composed militias, including Arab and Syriac forces, known as the Syrian Democratic Forces, or SDF, which came together in the course of the fight against ISIS, and which, in that struggle, forged a close working relationship with the United States military, despite vehement objections from the U.S.'s NATO ally, Turkey.

It is the achievements of the YPG and YPJ, their effectiveness in the war against ISIS, for which the revolutionary forces in power in Rojava have garnered most accolades and attention. The democratic confederal model of society for which they claim to be fighting, however, has received significantly less attention.

How are the popular assemblies or local councils functioning? Allsopp and van Wilgenburg managed to conduct a survey with some 180 randomly-selected individuals from the cantons of Jazira and Kobani, in an attempt to gauge the attitudes of the local citizenry about their new, direct-democratic institutions. What they found is somewhat disturbing, and certainly highlights some of the challenges for constructing a democratic-confederal society that truly lives up to the goal of "open[ing] political space for all social strata and allow[ing] diverse political groups to express themselves" (Öcalan, 2011b, p.26).

For starters, Allsopp and van Wilgenburg found that there was a relatively high level of non-participation in the popular assemblies. Indeed, fully one third of their interviewees volunteered, without even being asked, the information that they did not participate in these assemblies. "Participation in the commune system was limited," Allsopp and van Wilgenburg conclude (2019, p.144). Of particular interest is their contention that this limitation in terms of the rate of popular participation has a lot to do with the perceived "ideologization of the system," that is, its "partisan appearance" (2019, p.144). To this end, they contend that the "communes were widely reported to be dominated by PYD sympathizers (*hevals*), if not by members themselves, and the topics discussed and decisions made reflected the interests of the PYD-led administration" (2019, p.145). Moreover, they continue, there were "many claims that decision-making was limited to those connected to the PYD administration," that "whether or not participants opinions were considered depended on their personal connections," and even that "communal discussions and processes were a façade" (2019, p.145). Even more troubling, they report, "surveys also contained evidence that some people did not feel free to express their opinions if they might differ from PYD doctrine or ideology" (2019, p.145). Overall, and perhaps most damningly, they insist, "[l]ocals reported concerns that decisions were not driven by the processes or products of direct democracy, but rather that they were already made and discussion provided [but] an illusion of consultation" (2019, p.147).

In sum, what Allsopp and van Wilgenburg found was that "the development of the administration after 2012 occurred from the top-down, from the PYD, and it was an attempt to stimulate and realize a grass-roots revolution; " but that this "top-down, PYD-led implementation. . . [has] led to distrust of its institutions by much of the population not politically sympathetic to the PYD and averse to the domination of one political party" (2019, p.147; cf. Colsanti et al., 2018).

Thomas Schmidinger concurs with Allsopp and van Wilgenburg's critical assessment of the functioning of the council system, of its exclusions and limitations in practice.

He contends that, though, "in theory," the council system is "based on direct democracy," in fact it is "dominated by the supporters of the PYD and the latter's front organizations." Indeed, he continues, somewhat provocatively, by interrogating, "just like other historic council systems such as in the former Soviet Union, the question is who is really in the possession of political power: Is it, in the end, really 'all power to the councils,' or is it, after all, still 'all power to the party', or even to the army, that is, in this case, the YPG?" (2018, p.134).

Schmidinger dismisses as romantic idealization, if not deliberate propaganda, the assessment of "activists close to the PKK/PYD," such as Knapp, Flach, and Ayboga, in whose pioneering account, *Revolution in Rojava*, had made the claim that the council system amounted to nothing short of "the realization of the political theory of the US eco-anarchist Murray Bookchin and the 'attempt at a unification of the [. . .] concepts of Democratic Autonomy, Confederalism, and a Democratic Republic on a small scale' (2018, p.134). But at the same time, he also disputes the accounts of "less enthusiastic observers," such as the political scientist Michael Gunter, according to whom "the leadership of the PKK in the Qandil mountains . . . are the ones who exercise real control" (2018, p.134).

Like Gunter, Schmidinger does, in fact, insist, that "[t]here are . . . indications that the YPG, and, via the YPG, the headquarters of the PKK in Qandil, has the final say in decisive questions." He, furthermore, maintains that "[t]he long-lasting civil war has certainly contributed to a strengthening of the role of the military, that is, the YPG," noting, in this regard, that "[t]he members of the competing militia in the Syrian civil war have always regarded the commanders of the YPG as their serious contact partners, not the representatives of the political structures." Even so, on the other hand, he also insists that "the council system does play an important role in . . . small daily administrative decisions and the supply of the population; " that the councils provide important "feedback loops and local organizers; " that they "also provide propaganda for and the dissemination of the social model the PYD is striving for; " and finally, that, [p]articularly with regard to the role of the women in Kurdish society, the councils play an important role in reforming an extremely patriarchal society" (2018, p.135). The last point, about the role of women in the council system, is one about which Allsopp and van Wilgenburg also reported many of their interviewees had mentioned, in a positive vein (see Dirik, 2018; Rasit and Kolokotronis, 2020).

Schmidinger goes on to emphasize that "[o]ne of the biggest problems for the new system remains the lack of support of a large number of the Kurdish parties," though he also adds that "since the establishment of the self-administration in Rojava opposition to the PYD has. . . eroded" (2018, pp.135–136). He discusses in some detail the contours and content of an always present, sometimes intensifying intra-Kurdish conflict, between the PYD and the forces aligned with Barzani's Kurdish Regional Government in Iraq, before concluding that, over time, "the opposition to the PYD [has become] more fragmented than at the beginning of Rojavan autonomy" (2018, p.137).

Interestingly, Schmidinger diagnoses as well the existence of fissures and factions within the PYD, in particular stressing the ascendance within its ranks of certain opportunistic elements, some who before 2012 had "already been in high positions under the Ba'ath regime," and even a few noteworthy "big businessmen," which was a source of resentment among "many of the old leftists in the party" (2018, p.137). The newfound prominence of these opportunistic elements, Schmidinger notes, "follows a certain logic in the exercise of power [that] always confronts societies in political turmoil with massive challenges" (2018, p.138). Nevertheless, he simultaneously seems to suggest, this phenomenon seemed a source of significant disenchantment among not only long-time party loyalists but also the population more generally.

In relation to the mood among the general population, Schmidinger likewise diagnoses a rather quick and serious cooling off of initial revolutionary enthusiasm, associated especially with the onset of the war with ISIS. He notes that, back in 2013, when he was first doing fieldwork in the region, "a revolutionary atmosphere was prevalent," that though "[t]he people suffered from supply bottlenecks and uncertainty, [they] still took to the streets every week and bristled with hope and dynamism." However, already by 2014, "not much of this revolutionary atmosphere was still palpable among the ordinary population," indeed, that the initial optimistic mood had been replaced "by the mood typical of a civil war" instead (2018, p.138).

In sum, the overall picture of the functioning of the popular assemblies, at least as portrayed by the likes of Allsopp and van Wilgenburg, and by Schmidinger, is quite far from the more optimistic assessment provided by Knapp, Flach, and Ayboga, who judge "[t]he proliferation of communes in Rojava. . ., as well as the development of a communal economy" to be "the expressions of an alternative to capitalist modernity, developed slowly but steadily" (2016, p.120).

Our interviews with people close to the movement in Rojava tend to reinforce some of the critical observations made by outsiders about the limits to bottom-up, grass roots democracy in the revolution. For example, in this vein, Ibram Bozan would complain: "The commune only does small bureaucratic tasks and provides people with gas cylinders and bread. It has no real power. The decisions come from above and the commune just implements them" (Interview, November 7, 2021). Similarly, another person whom we interviewed, who asked to be identified only as a citizen from Rojava, would contend: "One of the problems of the commune system is that councils, which should be elected by communes and take their decisions based on communes, are completely separate from communes. People in councils are appointed by the administration and they make decisions, and they don't care about communes. Communes should be the foundational basis of all institutions in the administration. But in reality, communes are limited to mere service functions with no real power as they should be" (Interview, November 3, 2021).

What is the upshot of this analysis from the standpoint of revolutionary theory? David Graeber, who visited the region twice before his untimely demise, diagnosed a dual power

situation, between, on the one hand, "the democratic self-administration, which looks very much like a government, replete with ministries, parliament, and higher courts," and, on the other, "the bottom-up structures... where initiative flows entirely from popular assemblies" (2016, p.xvii). In a similar vein, Nazan Üstündag has insisted that "the relationship between the canton government and assemblies" is best conceived "in terms of self-defense," that bottom-up, direct-democratic institutions "will be the means by which localities maintain their autonomy against the canton governments, unmake the latter's claims to state-ness, and eventually appropriate their functions, proving them redundant" (2016, p.203). Such assessments would still seem to exaggerate the extent of autonomous, bottom-up, grassroots democracy at work, and thereby should be criticised for conflating the slogans of the revolution with the real dynamics of power. To put the point perhaps provocatively, though both Graeber and Üstündag are alive to what we referred to above as the peril of the political administrator, they nevertheless both substantially underestimate the peril of the military leviathan, notwithstanding Üstündag's explicit emphasis on the theme of self-defense.

TOWARDS THE DEMOCRATIZATION OF THE ECONOMY?

Which brings us to the question of the "communal economy." Knapp, Flach, and Ayboga have hailed the birth of nothing less than a new "social economy" in revolutionary Rojava, which they believe operates more or less in accordance with the principles of democratic confederalism as laid out by Öcalan, and that therefore can be "distinguished from both the neoliberalism of capitalist modernity and from Real Socialism's state capitalism" (2016, p.197). This social economy, they contend, "was to be entrusted to the hands of the society, which would implement economic activities in the residential streets, villages, neighborhoods, district, and cantons" (2016, p.198).

They emphasize, in particular, the proliferation of agricultural cooperative ventures initiated by the communes. They point out that about 80% of the land in Rojava had been nationalised by the Syrian regime, and that after the revolution, this was turned over to the communes. The remaining 20%, they note, remains in the hands of large landholders. This because, they claim, the new revolutionary authorities "spurn the use of force, so no large landholdings have been expropriated" (2016, p.199). Even so, they continue, the diversity of the cooperative economy "blossoms with every passing year," and, they furthermore stress, the revolutionary forces have "set a goal of extending cooperatives to as many sectors of the economy as possible and of making them, in the near future, the dominant economic form" (2016, p.200). To this end, they highlight the creation of several women's cooperatives.

These proliferating cooperatives, in turn, are in principle subjected to the control of the council system. For, they insist, "[i]n Rojava's social economy, needs are determined not by state or capital but by the communes" (2016, p.205). Though they admit that "[o]ther forms of trade and economy also exist in Rojava," they nevertheless contend that "the social economy model is spreading fast" (2016, p.206). As such, they can conclude, rather hopefully, that since 2012, despite a brutal embargo pushed by Turkey, intended to "starve their social and political model to death," Rojava has nevertheless "been developing, gradually, an exceptional economic form" (2016, p.207, 209).

For their part, Allsopp and van Wilgenburg observe that "economic organization around the communes and development of cooperatives had, in many cases, eased economic pressures and facilitated necessary cooperation over the distribution of scarce resource and services." Even so, they are quick to add, the fulfilment of "wider economic objectives... was hindered by the war, dependence on external supplies of goods and services, as well as by political divisions that prevented cooperation." Allsopp and van Wilgenburg interpret the conflict as having "provided the conditions for reorganizing local society and production around the democratic autonomy model." At the same time, however, they emphasize that "inevitable uncertainties about the future were obstacles to achieving the Administration's economic goals and their longevity." To this end, they highlight how "[n]egative effects on salaries, prices, production and population migration, among other factors, increased general hardship and restricted incomes and resources." As a result, they stress the prevalence of "dependence on private enterprise, black and grey market trade and external remittances, to meet basic individual and family needs," all operating "in parallel to organized cooperative economic activity" (2019, p.102).

Allsopp and van Wilgenburg go on to point out that "[t]he budget of the local administrations derived primarily from oil revenues, taxes on fuel and agriculture, and import duties." They stress that the war has had a serious negative effect on levels of production, and that "border closures and restrictions on trade" have had an adverse impact upon "availability and prices on imported goods" (2019, p.103).

In relation to oil, they note that its "production remains limited," and that revenues remain incomparable to pre-war levels, though they also report that "[b]lack market trade with the Assad government, as well as with the KRG," and taxes on oil produced by ISIS, "transiting through YPG held territory," have been widely alleged to have contributed to the Administration's revenue (2019, p.104).

Theirs is a picture of an economy quite devastated by war. They emphasize in particular the fact that "[e]conomic hardship and difficulties in meeting basic needs increased migration of Kurds from Syria to Europe, Turkey, and to the Kurdistan region [of Iraq]," while simultaneously "produc[ing] dependencies on alternative black/grey market trade or remittances from relatives abroad" (2019, p.107).

They do admit that "[i]nitiatives to develop the social economy and cooperatives and to distribute services according to this model, assisted regulating the war economy." Even so, at the same time, they stress that "[t]he existence of layers of parallel economies... tied northern Syria intrinsically to the Syrian interior and to its neighbours," and that such ties thus

"undermin[ed] attempts to develop self-sufficiency" (2019, p.109).

Schmidinger goes even further in relativizing the advances towards the so-called "social" or "communal" economy. He points out that, despite all the bluster about the creation of a new, "alternative" economy, "neither the Kurdish self-administration nor independent economists are able to give any reliable facts and figures in that regard" (2018, p.120). With respect to the widely-touted example of women's cooperatives, he contends that, "viewed from the economy at large, these cooperatives . . . play a relatively unimportant role" (2018, p.121). Nor does he consider the other cooperatives all that important either. To the contrary, he insists that, on the whole, "the new cooperatives hardly represent an 'alternative economy'" at all. Indeed, to this end, he maintains, "Rojava's economy is based on a mixture of war economy, small capitalism, and subsistence production of food within which the cooperatives lead a niche existence instead of representing a new economic system" (2018, p.121).

Like Allsopp and van Wilgenburg, Schmidinger, too, emphasises the importance of the black market economy, labelling "smuggling" in particular an "important economic factor." According to Schmidinger, the closure of the borders has created this "opportunity," turning "smuggling of all sorts of goods into an attractive business," in which, he insists, "both family clans and party and military structures are involved" (2018, p.121). Alongside the smuggling, and "despite all the fighting," he adds, "there is also an intense intra-Syrian trade that, in the case of Rojava, even crosse[d] the areas held by IS" (2018, p.121).

Besides the smugglers and the traders, "informal financiers" constitute another important part of "the new upper class." These financiers both cater to "the desire of refugees to deposit their money safely in Europe" and help facilitate remittances from abroad, which, Schmidinger insists, "form an increasingly important part of the income of the region" (2018, pp.122–123).

Nor are the profits made by the smugglers, traders, and informal financiers reinvested into productive businesses, Schmidinger adds. This because of the high risk of such investments in the context of a civil war in general, but also, more particularly, because "legal security for investments simply doesn't exist" (2018, p.123).

Finally, Schmidinger stresses that "no evaluation of the economic situation can overlook the fact that many items have become luxury goods in the course of recent years. . ., unaffordable for an increasing number of Rojavans" (2018, p.123). Furthermore, he contends that these "war-related shortages [have been] made worse by the presence in Rojava of more than a half million internally displaced persons (IDPs) from other parts of Syria," a situation rendered all the more complicated by the fact that "[l]arge international NGO's are virtually non-existent" there (2018, p.123).

The rather grave economic situation, as depicted quite soberly by Allsopp and van Wilgenburg, and even more starkly by Schmidinger, certainly sounds a far cry from the seemingly utopian scenario described in more enthusiastic accounts, such as the one provided by Knapp, Flach, and Ayboga.

A most recent contribution, by Azize Aslan, who writes from a perspective clearly close to the movement, albeit in an expressly self-critical vein, tends to confirm some of the more pessimistic observations made by outsiders about the limits to the socialization of the economy in the context of the ongoing war. To this end, she argues that "the necessity of an anti-capitalist economy is not sufficiently internalized and valued by the cadres and political leaders, nor by the peoples [of Rojava]" (2021, p.27). More specifically, with respect to the fate of cooperative initiatives, she even goes so far as to conclude that "the common situation of cooperatives in Rojava is, to a certain degree, one of collapse and distancing from the perspective of the social economy" (2021, p.325). She, furthermore, quotes the head of the Commerce Committee, who frankly admits that "[t]his is a war economy" (2021, p.255). Along such lines, he explained to her, in no uncertain terms, the centrality of the oil trade in relation to the administrative budget. In his words: "We are a society that is at war, we don't have other income besides oil. Without oil, we cannot pay salaries, we cannot maintain the YPG, we cannot buy weapons. Nor can we give this up just because it is not ecological, simply because the matter is more vital than that, it is a matter of life and death for us" (2021, p.241).

And indeed, in our own interviews with people associated with the movement in Rojava, we, too, have come across a good deal of pessimism, as well as discontent, about the limits to the democratization of the economy. For instance, one member of the Kurdish Committee of Jineology articulated the following criticism: "The cooperative economy should be the basis for our project. But even the existing cooperatives were monopolized by people working in the economic field and close to the administration. For example, in Şehba, to support the people, the administration gave financial credits to people to build economic projects. However, only people who were close to the administration received these financial credits, but not the poor people. This is a big problem. Many people have complained about this" (Interview, November 11, 2021). She would, furthermore, go on to make an explicit connection between the failure to build a just economy with the failure to build an ecological society. In her words: "In Öcalan's view, building an ecological society means creating a just economy. Such an economy should not harm the environment. This is the perspective of jineology, which emphasizes that all aspects of life should not be separated. They are interconnected, influence each other and should not harm each other. Politics should serve economics, economics should serve ecology, ecology should serve humanity, and demography should be ecological. Jineology analyzes this very well. Therefore, for Öcalan, the economic projects should be ecological. In fact, one of the main pillars of the 'democratic nation' is ecology. Unfortunately, all the economic projects we have harm ecology. For example, digging wells to obtain water is harmful to ecology. People dig wells without any restriction. This shows that there is a lack of awareness. The economic projects that have been carried out and proposed do not serve our project. They contradict our project. The economic projects that are made here are the same as those of the state" (Interview, November 11, 2021).

TOWARDS ECOLOGICAL SUSTAINABILITY?

Given the difficulties encountered in the efforts to overcome hierarchy in all its forms, including the obstacles to the construction of well-functioning, bottom-up, truly popular assemblies, as well as the very limited advances towards a thoroughgoing democratization of economic life, due especially but not only to the context of all-out war, it should come as no surprise that the concrete steps taken towards the realization of ecological sustainability, despite the discursive emphasis on it, have been few and far between.

Though such steps are not non-existent. Knapp, Flach, and Ayboga document in their book an emphasis on the part of the revolutionary authorities to pursue both crop diversification and the use of organic waste as fertilizer, in particular. The Internationalist Commune of Rojava further documents some specific efforts in these regards, and also makes mention of a few important initiatives geared towards water preservation and ecological waste disposal, in the chapter on "Ecological Challenges" in its book, *Make Rojava Green Again* (2018). But as the title of its chapter, which echoes the same title of a chapter in Knapp, Flach, and Aboyga's otherwise very optimistic book, definitely suggests, when it comes to the ultimate goal and pillar of ecological sustainability, even those closest to the revolutionary forces are willing to admit that, much more than their achievements, what needs to be stressed is the set of immense challenges that they face (see also Hunt, 2019).

Such challenges are not to be underestimated, even if the struggle to overcome all social, political, and economic hierarchies were much further advanced. For indeed, as Stephen Hunt has observed, the transition to ecological sustainability would require "a rapid break with the global fossil-fuel based economy," a task as urgent as it is almost impossible to even imagine against the backdrop of military attacks and economic embargoes (in Hunt, 2021, p.xiv).

Moreover, as Hoffman and Matin (2021) have perspicaciously pointed out, the region's "reliance on oil and its revenues, whether pragmatically or under fiscal duress, fundamentally contradicts the central tenets of Bookchin's 'social ecology' and the cooperative, organic agriculture" upon which it is supposed to be founded. They mention, rightly, in this regard, that Bookchin in fact "single[d] out hydrocarbons not only as a source of environmental, but also of social decay."

The U.S. military presence in the region, of course, has a lot to do with the oil infrastructure (Aslan, 2021, p.242). It is, arguably, the collaboration with the Americans that has heretofore hindered an all-out invasion by Turkish forces to put an end to the revolutionary experiment in Rojava once and for all. Though, it must be noted, such collaboration ultimately proved ineffective at halting the invasion and subsequent ethnic cleansing of the region's western-most canton, Afrin, in 2018, or the further incursion into the north-east of Syria by Turkish forces the following year. Even so, to the extent that the continuing existence of the revolution in Rojava depends upon collaboration with the world's main imperialist power, and NATO ally of Turkey, a break with the global fossil-fuel based economy seems especially hard to fathom. Nor, for that matter, does it seem at all likely that, even in the optimal post-conflict scenario, with the region's eventual incorporation into a democratized and federalized Syrian republic, would there be propitious circumstances for making such a break, either. So there is that major problem or dilemma, one that we cannot afford to forget, or to minimize, from the perspective of social ecology.

Then there is the other crucial issue of the scarce resource of water, upon which the decentralised, ecological forms of agriculture, promoted by the revolutionary authorities and pursued by cooperative ventures accountable to the communes, necessarily depend. Hoffman and Matin (2021) are again perspicacious in making mention of the fact that "under the specific conditions of Northern Syria, this also includes water infrastructure built by the Syrian Arab Republic, which, in turn, is dependent on the upstream control of the Euphrates River by Turkey." A serious vulnerability, to say the least. And one which has been significantly exacerbated "due to the actions of Turkey and its proxies following their military occupation of border areas in 2019," a point to which Nick Hildyard (2021) has recently sought to draw attention. To be specific, Hildyard has lamented how "[s]ince. . .Turkish-backed militia seized control of the Allouk water station, located near the town of Ras al-Ain (Serekaniye), supplies of water to North East Syria have been repeatedly interrupted by the Turkish authorities." This on top of the fact that, as Hildyard goes on to emphasize, "[b]ecause of dam-building and irrigation schemes in Turkey, the downstream flow of the [Euphrates] river has been reduced by 40–45 per cent since the early 1970s, with Turkey deliberately using its storage capacity to exert pressure on its riverine neighbours, particularly in times of conflict."

As such, it turns out that the autonomy to pursue ecologically-sustainable forms of agriculture comes up against two serious geo-political obstacles, both related to the implacable hostility of Turkey: the first, associated with the region's almost inevitable insertion into the global fossil-fuel based economy; and the second, associated with the region's particular vulnerability and dependency in accessing water. In sum, the relative abundance of one resource, oil, and the relative scarcity of another, water, would both seem to inextricably tie the fate of the revolutionary experiment in Rojava to the broader geopolitical context and dynamics in which it is inevitably embroiled.

And again, in our interviews with people in Rojava close to the movement, we came across very harsh, indeed sobering, assessments of the limits to the ecological initiatives undertaken by the revolutionary forces there. In this vein, one of the founding members of the Greentree Initiative, Ziwar Şêxo, would offer the following criticism: "On the ecological level, self-administration has remained only a theory. They only have talked about ecology, which is one aspect of the project, in a propagandistic way. However, in practice, the Commission of Ecology is tied to the municipality, which put their efforts on service matters, like cleaning rubbish, paving streets, etc. So the Ecology Office in the municipality is just a form without function. That also applies to the Ecology Administrative Board in Jazira, which is also very weak. Since 2020, many people severely

criticized them... As far as I know, there are no economic projects based on ecological measures" (Interview, November 8, 2021).

CONCLUSION

What lessons can we draw from the above analysis of the experience of Rojava for the paradigm of social ecology? Let us conclude by briefly mentioning three. A first lesson has to do with the conditions in which the "dual power" scenario was overcome, and consequently, how the revolutionary forces managed to establish their hegemony across the north-east of Syria. The retreat of the Syrian state, in the context of a civil war, created the revolutionary situation. The efficacy of the armed forces affiliated with the Öcalan-inspired Kurdish Freedom Movement is what secured the revolutionary outcome of that conjuncture. But these circumstances of state retreat and paramilitary seizure of control have not proven conducive to the consolidation of bottom-up, direct-democratic control. Rather, they have lent something of a top-down, militaristic and partisan flavor to the construction and consolidation of the popular assemblies.

A second lesson has to do with the difficulties of advancing towards the democratization of economic life in the context of a civil war. The proliferation of cooperative ventures, accountable to the communes, seems to have been somewhat dwarfed by the revolutionary authorities' reliance upon oil revenues, as well as by the hardships and "opportunities" presented by border closures and a war economy, which in turn has led to a certain prevalence of smuggling, trade, and informal finance. Rather than the black market constituting a niche within the progressive transformation towards a social economy, the reality would appear to be the other way around. The transition towards democratization, we can conclude, is very much hindered by the introduction of generalized scarcity that goes along with war.

A third lesson has to do with how the autonomy to pursue ecological sustainability can be undermined by a hostile geopolitical context. On the one hand, the addiction to oil proves particularly hard to kick in a context in which, not only must a war be financed, but also, the very survival of the revolutionary experiment ends up depending on collaboration with the world's foremost imperialist power. On the other hand, access to the crucial but scarce resource of water, upon which decentralised, ecological forms of agriculture necessarily depend, has been repeatedly and increasingly threatened by a hostile Turkish state, in control of water flows upstream along the Euphrates. Which ultimately goes to show the grain of truth in the old maxim that, in the long run, for a revolution to survive, it is imperative that it spread. But this point, in turn, obliges us to raise the difficult question: could it spread without war?

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

The co-authors discussed the ideas presented in the paper at length and wrote the paper together. TM was responsible for the first draft, while CH conducted several interviews with local informants in Kurdish and Arabic.

REFERENCES

Akkaya, H., and Jongerden, J. (2012). Reassembling the Political: The PKK and the Project of Radical Democracy. *Eur. J. Turkish Stud. Soc. Sci. Contemp. Turkey* 14. doi:10.4000/ejts.4615

Allsopp, H. (2015). *The Kurds of Syria*. London: I.B. Taurus.

Allsopp, H., and van Wilgenburg, W. (2019). *The Kurds of Northern Syria. Governance, Diversity, and Conflicts*. London: I.B. Taurus.

Aslan, A. (2021). *Economía anticapitalista en Rojava. Las contradicciones de la revolución en la lucha kurda*. Guadalajara, México: Cátedra Interinstitucional Universidad de Guadalajara-CIESAS-Jorge Alonso.

Biehl, J. (1998). *The Politics of Social EcologyLibertarian Municipalism*. Montreal: Black Rose Books.

Bookchin, M. (1992). "Urbanization without Cities," in *The Rise and Decline of Citizenship*. Montreal: Black Rose Books.

Bookchin, M. (2005). *The Ecology of Freedom. The Emergence and Dissolution of Hierarchy*. Oakland, CA: AK Press.

Bookchin, M. (2015a). "The Communalist Project," in *The Next Revolution. Popular Assemblies and the Promise of Direct Democracy*. Editors D. Bookchin and B. Taylor (London: Verso), 1–30.

Bookchin, M. (2015b). "The Ecological Crisis and the Need to Remake Society," in *The Next Revolution. Popular Assemblies and the Promise of Direct Democracy*. Editors D. Bookchin and B. Taylor (London: Verso), 31–41.

Colsanti, N., Frondizi, R., and Liddle, J. (2018). Grassroots Democracy and Local Government in Northern Syria: The Case of Democratic Confederalism. *Local Government Stud.* 44 (6), 807–825.

Dirik, D. (2018). "Overcoming the Nation-State: Women's Autonomy and Radical Democracy in Kurdistan," in *Gendering Nationalism*. Editor J. Mulholland (LondonCham: Palgrave Macmillan), 145–163. doi:10.1007/978-3-319-76699-7_8

Fischer, F. (2017). *Climate Crisis and the Democratic ProspectParticipatory Governance in Sustainable Communities*. Oxford: Oxford University Press.

Gerber, D., and Brincat, S. (2021). When Öcalan Met Bookchin: The Kurdish Freedom Movement and the Political Theory of Democratic Confederalism. *Geopolitics* 26 (4), 973–997. doi:10.1080/14650045.2018.1508016

Graeber, D. (2016). "Foreword," in *Revolution in Rojava: Democratic Autonomy and Women's Liberation in Syrian Kurdistan*. Knapp et al. (London: Pluto Press). xii-xxii.

Gunes, C. (2012). *The Kurdish National Movement in Turkey. From Protest to Resistance*. London: Routledge.

Guneser, H. (2021). *The Art of Freedom. A Brief History of the Kurdish Liberation Struggle*. Oakland, CA: PM Press.

Gunter, M. (2014). *Out of Nowhere. The Kurds of Syria in Peace and War*. London: Hurst and Company.

Hammy, C. (2021). "Social Ecology in Öcalan's Thinking," in *Ecological Solidarity and the Kurdish Freedom Movement*. Editor S. Hunt (London: Lexington Books), 25–40.

Hammy, C. (2018). The First Commune in Kobane: Construction and Challenges. *Open Democracy*. Sept. 3rd. Accessible on-line at: https://www.opendemocracy.net/en/north-africa-west-asia/first-commune-in-kobane-construction-and-challenges/.

Hildyard, N. (2021). Humanitarian Crisis in North and East Syria. *Lett. UK Foreign Secretary*. Nov. 6.

Hoffmann, C., and Matin, K. (2021). Beyond Anarchy and Capital? the Geopolitics of the Rojava Revolution in Syria. *Geopolitics* 26 (4), 967–972. doi:10.1080/14650045.2021.1924944

Hunt, S. E. (2019). Prospects for Kurdish Ecology Initiatives in Syria and Turkey: Democratic Confederalism and Social Ecology. *Capitalism Nat. Socialism* 30 (3), 7–26. doi:10.1080/10455752.2017.1413120

Internationalist Commune of Rojava (2018). *Make Rojava Green Again*. London: Dog Section Press.

Jongerden, J., and Akkaya, A. (2016). "Kurds and the PKK," in *The Wiley Blackwell Encyclopedia of Race, Ethnicity, and Nationalism*. Editor J. Stone (London: Routledge), 1–5.

Knapp, M., Anja, F., and Ercan, A. (2016). *Revolution in Rojava: Democratic Autonomy and Women's Liberation in Syrian Kurdistan*. London: Pluto Press.

Knapp, M., and Jongerden, J. (2014). Communal Democracy: The Social Contract and Confederalism in Rojava. *Comp. Islamic Stud.* 10 (1), 87–109., No.

Leezenberg, M. (2016). The Ambiguities of Democratic Autonomy: The Kurdish Movement in Turkey and Rojava. *Southeast Eur. Black Sea Stud.* 16 (4), 671–690. doi:10.1080/14683857.2016.1246529

McDowall, D. (1996). *A Modern History of the Kurds*. London: I.B. Tauris.

Miley, T., Yildiz, G., and Hammy, C. (2018). "The Turkish-Kurdish Conflict in Historical Context," in *Your Freedom and Mine: Abdulah Öcalan and the Kurdish Question in Erdogan's Turkey*. Editors T. Miley and F. Venturini (Montreal: Black Rose Books).

Öcalan, A. (2007). *Prison Writings. The Roots of Civilisation*. London: Pluto Press.

Öcalan, A. (2010). *Jenseits von Staat, Macht und Gewalt*. Neus: Mesopotamien Verlag.

Öcalan, A. (2011a). Prison Writings. The PKK and the Kurdish Question In the 21st Century. London: Transmedia Publishing Ltd.

Öcalan, A. (2011b). *Democratic Confederalism*. Cologne: International Initiative.

Öcalan, A. (2016a). *Democratic Nation*. Cologne: International Initiative.

Öcalan, A. (2016b). "The Civilizational Crisis in the Middle East and the Democratic Civilization Solution," in *Arabic Version: Civilization and the Convening of the Democratic Democracy in the Middle East*. Third Edition (Qandil Mountains: Azadi Publications).

Öcalan, A. (2017). "The Manifesto of the Kurdistan Revolution," in *Arabic Version: The Kurdish Case and the Dissolution of the Democrats* (Qandil Mountains: Azadi Publications).

Öcalan, A. (2015). "Manifesto for a Democratic Civilization," in *Volume 1. Civilization: The Age of Masked Gods and Disguised Kings* (Porsgrunn: New Compass Press).

Öcalan, A. (2020). *The Sociology of Freedom*. Oakland, CA: PM Press.

Rasit, H., and Kolokotronis, A. (2020). Decentralist Vanguards: Women's Autonomous Power and Left Convergence in Rojava. *Globalizations* 17 (5), 869–883. doi:10.1080/14747731.2020.1722498

Schmidinger, T. (2018). *Rojava: Revolution, War, and the Future of Syria's Kurds*. London: Pluto Press.

S. Hunt (Editor) (2021). *Ecological Solidarity and the Kurdish Freedom Movement* (London: Lexington Books).

Üstündag, N. (2016). Self-Defense as a Revolutionary Practice in Rojava, or How to Unmake the State. *South Atlantic Q.* 115 (1), 197–210., No.

White, P. (2000). "Primitive Rebels or Revolutionary Modernizers? *The Kurdish National Movement in Turkey*. London: Zed Books.

White, P. (2015). *The PKK. Coming Down from the Mountains*. London: Zed Books.

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Phronesis at the Human-Earth Nexus: Managed Retreat

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This study explores how experiences from the current pandemic can inform societal responses to future climate change. To that end, an established philosophical concept of geoscientific insights (geoethics) is utilized to advice on governance under systemic uncertainty that, in turn, is a critical feature of complex-adaptive dynamics. Illustrative examples are the Covid-19 health pandemic and the impact of the global sea-level rise to threatening heights in the early 22nd Century. The term "geoethics" labels an emergent geo-philosophical school of thought rooted in geoscience expertise. When combined with contemporary political philosophies, geoethics leads to a geo-philosophical framework that can support adaptation to complex-adaptive dynamics by favoring multi-agent and context-depending processes (e.g., learning-by-doing). The proposed geo-philosophical framework merges geoethics with the political philosophies of H. Jonas (1903–1993), L. Kohlberg (1927–1987), and M. Bunge (1919–2020). These contemporary philosophies emphasize as relevant for achieving a modern caretaking society, respectively, "the hierarchy of societal coordination processes," "the intergenerational responsibility of agents of change," and "the balancing of individual wellbeing (happiness) and duties." When these philosophies are combined with geoethics, a logical approach can be derived for policy design and decision-making. It emphasizes the "autonomy" (of the human agent) combined with a civic culture that favors "trustworthiness," "scientific culture." and a "culture of inclusive justice." We argue that governance of adaptation to complex-adaptive dynamics (e.g., climate change impact) can be informed by the geo- and society-centric perspectives of the proposed geo-philosophical framework. It can address "Human Earth Nexus" governance issues using the knowledge of both natural and social sciences and applying the lens of geoethical thinking.

Keywords: managed retreat, sea level rise, COVID-19, socio-ecological systems, Human-Earth Nexus

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INTRODUCTION

The problems accumulating around global change have created a new form of the Human-Earth Nexus. A geo-philosophical framework is proposed for how to act at this nexus (Plenge, 2020). The framework combines "responsible Earth-sciences" (Bohle and Ellis, 2016), e.g., geoethics (Peppoloni et al., 2019), with political philosophies addressing some essentials of caretaking societies. As an illustration, this essay looks at experiences from the Covid-19 health pandemic and the expected impacts of a rising mean sea level. The relationship between these two different events can be traced, given that both unfold in complex-adaptive social-ecological systems. The

commonalities between a pandemic disease and the impacts of anthropogenic global change are apparent when considering culture or sociological features.

Adaptation to impacts of global change will involve retreat in various forms (Hanna et al., 2021; Siders and Ajibade, 2021). The notion of "managed retreat" is more than a managerial or technical task. It concerns social and cultural adaptation (Dachary-Bernard et al., 2019). The cause for the retreat will be that local (physical) living conditions are unbearable, for example, because of heat, drought, or floods. The example discussed in this essay is the rising global mean sea-level in the next century and beyond. Other threatening impacts of anthropogenic global change are expected sooner (Robinson et al., 2021), and what will be discussed in this essay will apply to them likewise.

While there is still a long way to go, and regarding the sea-level of the 22nd Century, the Intergovernmental Panel on Climate Change (IPCC) was able to present in 2021 robust scenarios on the sea-level rise beyond the next century (Masson-Delmotte et al., 2021). Still, in 2014, the IPCC, an intergovernmental consultation mechanism with the support of scientific expertise, could not agree on a physically plausible upper limit bound for sea-level rise by 2100 and beyond. Seven years later, the situation evolved. Governments agreed sea-level rise poses a challenge having a 100-year-plus time horizon.

We argue that two distinct phenomena can be put into mutual perspective: first, the COVID-19 health pandemic of 2020 onward and, second, the global mean sea-level rise to threatening levels due to global warming. Despite evolving on different time scales, the current COVID-19 health pandemic and the future global mean sea-level are comparable phenomena because they show similar systemic features. To relate them with governance issues, this essay explores how "geoethics" (Peppoloni et al., 2019) combined with contemporary political philosophies could support a cultural environment appropriate to tackle the impacts of anthropogenic global change.

We hypothesize that an appropriate cultural environment could be anchored in a double imperative, namely to act driven by (i) scientific insights (into the Earth System) and (ii) concerns for caretaking societies. Subsequently, four pivots for policy-design are proposed for acting at the Human-Earth Nexus, namely "autonomy," "trustworthiness," "scientific culture." and a "culture of inclusive justice," which are underpinned by emphasizing: processes for reproducible knowledge-building; Earth science literacy; the quality of societal coordination processes; the responsibility of agents of change; and the balance between individual wellbeing and duties.

Following this introduction, this essay is structured into three sections. The Matters and Methods section illustrates the study's concept; the examples (COVID-19 pandemic and sea-level rise) seen through the lens of this concept; the geoethics approach, including how it can inform governance when combined with political philosophies. The Results section derives key features for designing policies. The concluding section, Discussion, argues why these pivots empower human agents and are suitable for a caretaking, learning, and participatory society informed by scientific insights. Regarding nomenclature, (i) the notion "human agents" should be read as individual, collective or institutional human agents/agency; (ii) the notion "scientific insights" should be read as best available scientific understanding including related uncertainties; (iii) the expression "geoethical logic approach" is used to name a particular manner to structure geoethical thinking, (iv) the term "systemic uncertainty" is used to label the intrinsic non-deterministic behavior of complex-adaptive systems; for a discussion, see (Bohle, 2020, 2021).

MATTERS AND METHODS

This section is divided into five parts. The first and second parts outline the background of the study and the theory of complex-adaptive social-ecological systems (Biggs et al., 2021). The third part describes the COVID-19 pandemic emphasizing how human agents perceive the pandemic. From these perspectives, we can deduce how to approach governance of impacts of global change. The fourth part describes what we know about the incoming sea-level rise because of global warming, emphasizing how human agents likely perceive global sea-level rise. The fifth part describes geoethics and the derived "geoethical logic approach."

Background to the Study

The specific research question of this essay is how geoscience-informed philosophies may support designing policies for adaptation to anthropogenic global change. To approach the question, we start from what we – as geoscientists in the broader sense – have in hand, that is, a bulk of corroborated empirical evidence and recent developments in geo-philosophical concepts (Peppoloni et al., 2019; Bohle and Marone, 2021; Marone and Bouzo, 2021).

The argumentation outlined in the essay applies a geo-philosophical approach. It combines modern concepts (Mogk, 2018; Peppoloni et al., 2019) of 'responsible Earth Sciences' (Geological Society of America, 1997; United Nations, 2013; Bohle and Ellis, 2016; Vasconcelos and Orion, 2021) with three political philosophies formulated in the last century. These philosophies address essential elements of a caretaking society, namely "societal coordination" (Kohlberg, 1981), "intergenerational responsibility" (Jonas, 1979), and "balance of wellbeing (happiness) and duties" (Bunge, 1989).

As a description of a specific knowledge domain, "Earth Sciences," in a restricted connotation "Geosciences," are the natural sciences studying the Earth, mainly abiotic processes, although without neglecting biological and social processes (Phillips, 2012; Bohle et al., 2019). Because of the study subjects of Earth Sciences (Geosciences), controlled experiments are rarely possible (e.g., sediment flux), and hypothesis testing is constrained due to the limited reproducibility of natural/social phenomena (e.g., river floods). Insights are gained from subsequent observations of recurrent phenomena (e.g., volcanic eruptions) and, in some cases their mathematical simulation (e.g., Meteorology, Oceanography). Input information is often incomplete, insufficiently precise or not standardized.

Many hypotheses about natural/social phenomena cannot be tested by "reproducing" them in *stricto sensu*. In this

sense, Earth Sciences are constantly confronted with a sort of "reproducibility crisis" (Kleinhans et al., 2010; Marone et al., 2019) Therefore, the knowledge-building process of Earth Sciences applies a "synthetic thesis of truth" (Bunge, 2006), which helps combine empirical evidence, stochasticity (combination of deterministic and probabilistic approaches), mental experiments, or computer modeling. Synthetic thesis of truth *"requires considering a hypothesis corroborated both by purely empirical confirmation and external consistency or compatibility with the bulk of existing background knowledge (systemicity).… Pattern consistency (empirical control) together with an understanding of causal relations (rational together with empirical control) make confirmed hypotheses robust and more reliable"* (Marone et al., 2019, p 363).

A few words are added to contextualize the subjects of this essay. The challenges of climate adaptation are demanding and they include both risk assessment associated with ongoing change or threshold-depending events and risk perception, for example, depending on local culture and individual experiences (Stewart and Lewis, 2017). Options to handle risks might be hard to implement or pose additional threats. While non-human systems are complex, i.e., non-linear in nature, an additional complexity of modern societies is related to 'technologies' or the "technosphere" (Haff, 2017; Trischler and Will, 2017; Kranzberg, 2019). Tibaldeo, *"For several reasons our present-day civilization has become increasingly complex. Indeed, complexity seems to be one of the most eloquent characteristics which unifies several aspects of today's world, such as epistemology, science, technology, politics, economy, culture, society, and so on"* (Tibaldeo, 2015, p. 225). Hans Jonas suspected in his essay 'The Heuristic of Fear', that technology places the future of humanity in jeopardy (Jonas, 1980). Bunge pledged *"the scale and complexity of modern technological impacts requires that experts be in charge of social action — although they must be answerable to the public. Technologists, instead of being shackled by others, must tackle their own moral problems and take a hand in overhauling ethics"* (Bunge, 1980, p. 139).

Contextualizing the Examples

Throughout the next century, the world will experience, unevenly though fully developed, the distress of social-environmental systems due to the consequences of anthropogenic global change. These circumstances require a philosophy to support governance, for example, in building adaptive strategies such as Bayesian methods (recurrent updating of probable scenarios) or "relational heuristics" (Biggs, 2008; Preiser et al., 2021).

The COVID-19 (SARs-CoV-2) pandemic, declared by the World Health Organization in March 2020, offers qualitative lessons on governance (see, for example Cardoso et al., 2020; Marone and Bohle, 2020; Santos-Carrillo et al., 2020).

Regional climates and living conditions shift (Robinson et al., 2021). They will have changed substantially by mid-century. People will have to migrate. Notions like "climate refugees" are part of the political vocabulary, arguing for a "compassionate retreat" (Brown and Schmidt, 2014). The future rise of the global sea-level and the current COVID-19 health pandemic can be compared because of systemic similarities. Both phenomena are (1) pandemic/global and rapidly evolving, (2) certainly occurring and scientifically defined, (3) less known regarding local manifestations blurred by shifting baselines, (4) on everyone's mind because of massive media reports, (5) happening globally but punctuated by local disasters, and (6) causing people's reactions ranging from fear to denial. The given experiences with modest (local) sea-level rise already illustrate these features (Pilkey and Pilkey, 2019).

These systemic similarities arise because complex-adaptive dynamics characterize both phenomena. Complex-adaptive dynamics are typical of (many) social-ecological systems (Biggs et al., 2021). Mutatis mutandis, the systemic lessons from the COVID-19 health pandemic (see, for example Angeli and Montefusco, 2020; Merriam, 2020; Robie, 2021), can inform on distant events like the impacts of global change phenomena (e.g., high sea-levels) in the next century.

Complex-Adaptive Social-Ecological Systems

Complex systems, or non-linear and threshold-depending dynamical systems with multiple non-separable cause-effect pathways, are challenging. The resulting complex-adaptive system dynamics lead to systemic uncertainty. Determinism, the dominant (engineering) paradigm in (linear) systems theory, is failing when it comes to complex systems (Beven et al., 2018). A classic example in physics is the study of turbulent flows, relevant, for example, in boundary layers of lakes (Bohle-Carbonell and van Senden, 1990; Cimatoribus et al., 2018). Learning that the behavior of a given phenomenon cannot be predicted or controlled can be perceived as faulting data and knowledge. Subsequently, the search for a "blueprint" or "master plan" may continue, often motivated by the available mathematical tools and computational methods (Hansson, 2015). However, with a better understanding of the dynamics of non-linear systems, scientists deal with them (e.g., turbulent flows) in a stochastic way, which ultimately enables the modeling of climate systems[1].

Beyond non-linearity, natural dynamics exhibit links, feedbacks, cascading reactions, unexpected turning points, irreversibility and multifaceted properties, making dynamics a complex-adaptive reality of systemic uncertainty (**Table 1**) to be dealt with (Biggs et al., 2021). In the mid-18th Century, Thomas Bayes formulated a theorem stating that probability statements can describe unknown parameters. The Bayesian approach is a conceptual paradigm to search for approximate solutions (in a probabilistic sense). Examples are various practices: learning by doing; updating (probable) scenarios successively as more evidence or information becomes available, or stepwise constraining systemic uncertainties (see, for example Fuerth and Faber, 2012; Barash et al., 2019; Muiderman et al., 2020; Biggs et al., 2021; Lo and Zhang, 2021; Preiser et al., 2021).

Like any complex-adaptive dynamical system, the social-ecological one presents systemic uncertainty. Instead of pursuing fully informed choices, Bayesian approaches offer remedies (Biggs, 2008; Kato and Ahern, 2008; Koppes and King, 2020), which are helpful when the rate of change outpaces the speed

[1] As acknowledged by the 2021 Nobel prize in Physics.

TABLE 1 | Dynamic characteristics of complex adaptive systems (adapted from Woermann et al., 2018).

Feature	Description	Effect
Networked causes	multiple, parallel cause-and-effect pathways	local and system-wide behavioral patterns
In-put/out-put relation	not proportionally related	minor changes in a controlling driver can cause rapid, system-wide behavior/significant changes in the controlling driver may cause slow and limited system-wide response
Structure	structural parts are multifunctional	different structural parts may perform the same function/the same structure can perform various functions
Non-linearity	amplifying dynamic interactions.	Minor inputs may trigger cascades of significant effects that cause surprise, and uncertainty/local interventions may modulate system-wide organization

of decision-making and implementation (Berta et al., 2020; Tiggeloven et al., 2021).

A Complex-Adaptive Earth System

The concepts of complex-adaptive dynamics and social-ecological systems are a powerful description of the (natural and societal) features of the Earth System (Preiser et al., 2018). Complex-adaptive systems are hard to handle and may behave contrary to the observer's expectations. Such counterintuitive system behavior, which can be perceived as "wicked" (Head and Xiang, 2016), includes, for example (see **Table 1**), multiplexed cause-and-effect paths, not proportional output-input relations, amplifying interactions, and multifunctional structures.

As part of the Earth System, humankind operates a globalized network to supply food, commodities, and goods. It is tightly knotted with multiple process loops (Walker et al., 2020). They create an intimate social and ecological dynamic entangling World and Nature (Donges et al., 2017; Behrendt, 2018; Dyer-Witheford, 2018; Bennett et al., 2019; Schlüter et al., 2019).

As part of the Earth System, human practices also encompass the governance arrangements of public bodies or corporations (Biermann, 2014). For example, governance arrangements determine how to design technologies, production systems, and consumption patterns. The societal processes (e.g., administrative, political, cultural) and related infrastructures (e.g., parliaments, ministries, foundations, think tanks) have a dual nature; namely, they combine a cognitive function (sensemaking) and a material foundation (to enable the sensemaking process). In social-ecological systems, people's attitudes and behaviors have mental and material forms. The latter (institutions, technologies, interactions) mirror cognitive processes.

Such "soft sub-systems" of the Earth system co-shape its dynamics and, hence, influence the entire system behavior. They are essential, like technical artifacts or natural processes. They contribute to complex-adaptive dynamics of the Earth System given that *"humans are actors whose actions are not just determined by their natural, social, and cultural environments, by their economic, political, or religious interests, or by their drives and passions, but also by their thinking, and in particular by what they actually know about the world and themselves, and by how they know and share it, as well as by the way in which they make use of their knowledge"* (Renn, 2020, p.10f).

Lessons, the COVID-19 Pandemic

On the day of writing[2] and about 21 months since the WHO declared a health pandemic, the number of infected people cumulated to 248 million, the death total to 5.0 million, and the administrated vaccine doses to 7.1 billion. Hence, the reservoir of infectible humans is about half of the global population, assuming two vaccination doses are required to protect an individual.

The COVID-19 health pandemic reached threatening levels, that is, the risk of the health system collapsing at different times in different regions (Reddy, 2020; Daghriri and Ozmen, 2021; Kuhlmann et al., 2021; Coccia, 2022). Likewise, news about events and actions in one region informed authorities and people in other regions unevenly, leading to a patchwork of responses. Although robust and valid information was available, the levels of rumors, fake news, and misinformation were disorienting for many. Subsequently, the regional threats and impacts differed enormously; (see, for example Reicher and Stott, 2020; Shaw et al., 2020; Lindholt et al., 2021).

The COVID-19 health pandemic has hit many sectors of the economy and society including health systems. Examples are food production and supply chains (Chowdhury et al., 2020; Fernandes, 2020; Bassett et al., 2021). Beyond studies in such fields and leaving aside studies comparing countries' strategies (Chowdhury et al., 2020), other works researched issues like terrorism (Marone, 2021), ethics for health system operators (Robert et al., 2020), or ethics of management issues, including sociological perspectives (Schröder-Bäck et al., 2020).

The Covid-19 health pandemic is a collective experience of cognitive uncertainties (Sarry et al., 2021), both for individuals and institutional agents (Janssen and van der Voort, 2020; Shu and Wang, 2021). The pandemic is profoundly influencing daily lives, although, for many, the disease is not experienced "hands on" but is communicated through mass and social media. People collectively experienced how usual ways of doing got scattered. The pandemic challenged the lifestyles of many people and weakened communities in many developing countries; (see, for example Cardoso et al., 2020; Bassett et al., 2021; Egger et al., 2021). Although the coerced temporary changes of lifestyles (social distancing, lockdowns) were not physically threatening for most, the perceived loss of autonomy, security, and liberty was collectively unknown for many (Anicich et al., 2020).

The features of the pandemic also challenged the sensemaking capabilities of many, triggered defensive reactions (fear, denial), and encountered dispersed and less-than-adequate responses, also from governments. Most societies (states) initially implemented various containment measures without much intergovernmental coordination (Capriglione, 2020). Intergovernmental cooperation emerged stepwise and erratically.

[2]https://coronavirus.jhu.edu/map.html (5th November 2021).

Given these experiences and referring to COVID-19, Angeli and Montefusco (2020, p. 1) stated that *"just as complex adaptive systems, societies affected by the pandemic and by the subsequent containment policies present non-linear and unpredictable outcomes, which highly depend on the social systems' initial states and on the behavioral rules governing the actions and interactions of the agents composing the systems."*

The COVID-19 health pandemic illustrates what is reported as systemic for complex-adaptive socio-ecological systems (Termeer et al., 2015, 2016; Huang and London, 2016; Preiser et al., 2017). Also, the COVID-19 pandemic taught those in charge of decision-making to be aware of unexpected disproportionate consequences of management actions, while at the same time decision-making must be flexible, highly adaptive, fast, and frugal; (see for example Fuerth and Faber, 2012; Munene et al., 2018; Kool et al., 2020).

Teachings, the Rising Sea-Level

Introduction

The science of global sea-level rise is robust. The global mean sea-level has risen more rapidly since 1900 than in any previous century. Likewise, like many other climate changes, it is now irreversible for centuries to millennia, even if climate change mitigation strategies are implemented (Clark et al., 2016; Christodoulou et al., 2019; Frederikse et al., 2020; Horton et al., 2020).

The global mean sea-level will rise to threatening heights in the early 22nd Century (Kulp and Strauss, 2019). The threats are multiple, including flooding, rising mean water table, shoreline erosion, saltwater intrusion into coastal aquifer, loss of coastal wetlands, or hampered the operation of ports. The threats vary depending on the local topography, such as cliffs, lowlands, or anthropogenic coasts (Sterr, 2008; Leuven et al., 2019). How to handle them depends, for example, on geomorphology, hydrology, climate, economy, population density, socio-political systems, and culture (Tol et al., 2008). Subsequently, people will retreat from the actual shorelines (Mees et al., 2014; Anurag Danda et al., 2019; Piguet, 2019; Siders, 2019; Doberstein et al., 2020). Even under optimistic climate change mitigation scenarios, the global mean sea-level will continue to rise for several 100 years. Hence, a reasonable societal goal should be to retreat, when needed repeatedly, from the shoreline in an anticipated and coordinated manner before disasters strike (Hanna et al., 2021).

A Narrative – Global Mean Sea-Level

Referring to the IPCC[3], it is sure that the global mean sea-level will continue to rise over the entire 21st and 22nd Centuries. Compared to 1995–2014, by 2150, it could increase to 0.37–0.86 m (very low emission scenario) and 0.98–1.88 m (very high emission scenario). In the longer term, the rise (by about 2–3 m) will continue because the deeper layers of the world ocean will warm (and expand). Some ice sheets will melt even if the warming is limited to 1.5°C. With high confidence, the sea-level will remain elevated for thousands of years. Even if global CO_2 emissions were negative, it would take several centuries to millennia for the rise to reverse. Hence, even under the most optimistic climate change mitigation scenarios, the rising sea-level rise threatens the world's coastal zones. Caused by local mean sea-level rise, extreme sea-level events occurring locally once per century in the recent past are projected to happen at least once a year in most places. Subsequently, the frequency and severity of coastal flooding and impact on operations of harbors will increase (Christodoulou et al., 2019).

Global warming will cause flooding of productive coastal areas within the next 100 years involving substantial uncertainties and neither easy nor inexpensive solutions (Anderson et al., 2020; Lincke and Hinkel, 2021). The "shifting baseline syndrome" will mark the events (Pauly, 1995; Jones et al., 2020; Thomas, 2020), and regional differences within and beyond national jurisdictions will characterize them. Initially, bothersome hazards (e.g., saltwater intrusions) and deadly threats (e.g., flooding) will be local, and responses (e.g., migration, either due to personal health and safety concerns or by economic considerations) may be spontaneous and individual (Pilkey and Pilkey, 2019). The retreat process will be a media-reported experience (of 'the others' lives'), one of the several similarities of the COVID-19 pandemics and climate change. Rising seas will probably force millions of coastal people to relocate (Hauer et al., 2020), triggering a climate refugee crisis (Leardini, 2017; Simonelli, 2021) like no other; including the disappearance of some island countries or estuarine regions (Nunn et al., 2017; Anurag Danda et al., 2019).

Regional Patterns, an Example

Although caused by global warming, the rising mean sea-level is not a uniform steric phenomenon (Horton et al., 2020) because of ocean dynamics and mass distribution (ice). Significant regional differences will occur (Grinsted et al., 2015), including shifts of extreme events wherever the mean sea-level is subject to substantial changes (Witze, 2018). For example, water levels in Hamburg or London (Western Europe) may rise by 0.8 m and drop in Oulu (Northern Europe, Bay of Bothnia) by 0.1 m. Related to the mean sea-level changes, the likelihood of the combined height of astronomical tides and storm surges [extreme sea-levels (ESL)] shifts. For example, in the Elbe estuary (Germany, North Sea), *"the 500 year ESL is projected to become as or more frequent than the historical 100 year ESL"* (Rasmussen et al., 2018, p. 9). Threats increase further when extreme sea-level combines with strong river discharge (Hofstede, 2019a, p. 289).

Like their peers in the Netherlands (de Graaf et al., 2009), public authorities in Northern Germany plan for mean sea-level rise and increased likelihood of extreme sea levels by the end of the 21st Century (Sterr, 2008; Hofstede, 2019a). Also, the option of a managed retreat is mentioned. However, it is a sensitive topic because, for example, in *"the Schleswig-Holstein sector of the Wadden Sea, more than 1,000 years of land reclamation through embankments has led to the detachment of about 2,400 km² of coastal marshes from marine influences.... Today, the mainland coastline is almost completely occupied by 190 km of primary embankments in the responsibility of the State. The 8 to 9.5 m high and up to 80 m broad embankments protect*

[3]https://www.ipcc.ch/assessment-report/ar6/

about 130,000 inhabitants and 19 billion € of capital assets.… Due to the long history of land reclamation, in many places, several embankments and polders exist behind each other; the oldest ones lying the farthest from the sea. In result, more than half of the coastal lowlands are protected by a so-called second embankment-line" (Hofstede, 2019b, p. 1069). This century-long cultural path of defending shorelines (and claiming land from the sea) will be challenging to reverse. Hence, as we have the better part of a century to prepare, the question is how a developed industrial society of deeply rooted engineering prowess prepares to implement a "retreat" when former societies did not "give up" and sanctioned those who did. In the history of German coastal communities, individuals were expropriated when they did not participate in the maintenance of shore defenses (Gierke, 1907).

To date, it would be mere speculation as to how a policy change for shore defense could evolve in Germany under given cultural, historical, and economic circumstances. Nevertheless, it seems inevitable for the 22nd Century. One may wonder what kind of disasters must strike, whether they would be politically viable, and whether they would remind of the historical past (*Grote Mandränke* 1362 and 1634)[4] that was overcome since the 19th Century (Hansen, 1894).

Finally, we would like to recall that the situation at German coasts is by no means unique. Subsequently, "managed retreat" is discussed in many places (van Staveren and van Tatenhove, 2016; Dachary-Bernard et al., 2019; Anderson et al., 2020; Dundon and Abkowitz, 2021; Hanna et al., 2021; Siders and Ajibade, 2021). It is vital to develop a culture that treats removal policies as managed, coordinated, and anticipated.

Geo-Philosophical Insights

Within Earth Sciences, geoethics investigates societal contexts and professional obligations (Peppoloni and Di Capua, 2012; Peppoloni et al., 2019). Distinct from Gaian ethics or alike, geoethics is a Western geo-philosophical school of thought. It is rooted in geoscientific knowledge (to understand Earth), emphasizes practical wisdom (*phronesis*), and tackles issues relating to responsible geosciences. Subsequently, geoethics can be structured for various application contexts and with different philosophical embedding (Bohle, 2021; Peppoloni and Di Capua, 2021).

The variants of geoethical thinking share the insight *"that choices that are taken in a specific social and cultural setting, that respect the ethical norms of this setting, may appear unethical elsewhere*" (Peppoloni et al., 2019, p. 30). This "degree of freedom" or "option of normative pluralism" is an intentional feature, which gives geoethics plasticity to operate in different contexts. Still, geoethical thinking implicitly incorporates formal ethical frameworks (see Hourdequin, 2015, p.55): *"utilitarianism directs our attention to consequences; Kant's ethics to respect and autonomy; Aristotle's virtue ethics to character and its connection to living well."* In geoethical thinking, Kantian and Aristotelian thinking is vital. Utilitarian views are expressed, for example, in the Cape Town Statement on Geoethics, asserting that geoscientists are *"primarily at the service of society. This is the deeper purpose of their activity*" (Di Capua et al., 2017, p. 6). Furthermore, (Bohle and Di Capua, 2019; Mogk, 2020) discuss issues of justice, diversity, and equality; although without exploring ethics of justice.

The variant of geoethical thinking that is used in the following sections merges geo-philosophical insights with the contemporary (political) philosophies of Kohlberg (1981), Jonas (1979), and Bunge (1989). These philosophies provide additional framing, incorporating thinking regarding "a hierarchy of societal coordination processes"; "an intergenerational responsibility of agents of change"; and "a balance of individual wellbeing (happiness) and duty." The embedding of geoethical thinking in these political philosophies leads to the "geoethical logic approach" (**Table 2**).

This approach was suggested in recent years (using various terms to name it, e.g., geoethical rational, thesis). It targets to apply geoethical thinking in a broader context than professional geosciences; (see Bohle, 2020, 2021; Bohle and Marone, 2021). The 2-fold foundation of this approach ensures that [geo]ethical decision-making is guided by insight into the functioning of the Earth System and concerns about the functioning of the society, both under the imperative of "caretaking" for the entire social-environmental system. The descriptions of the geoethical logic approach would require a scrutiny beyond what is possible in this essay. Applying a "folk meaning" or "practitioner's wisdom" seems sufficient in the given context (Bardach, 1987). However, given the following arguments, how we use the term "reproducibility" is sketched in the following paragraph.

Reproducibility means that the relation between the object of a study, the method, and the finding is invariant; e.g., *"genuine science is impersonal"* (p. 461) or *"every research project… should be impersonal, and therefore replicable by others employing the same methods*" (Bunge, 2017, p. 467). Hence, reproducibility implies that knowledge (e.g., scientific finding) should not depend on investigators' philosophical, cultural, social or political ideas[5]. Furthermore, reproducibility means that the same piece of knowledge can be established by applying different methods to the same object of study. Finally, the reproducibility of knowledge (e.g., a scientific finding), can be supported by a theoretical framework, which may take a mathematical form.

RESULTS

The future rise of the mean sea level and the ongoing COVID-19 health pandemic show systemic similarities; as listed above: they are (1) pandemic/global and rapidly evolving, (2) certainly occurring and scientifically definite, (3) less known regarding local manifestations blurred by shifting baselines, (4) on everyone's mind because of massive media reports, (5)

[4]https://www.ndr.de/geschichte/chronologie/Die-Grote-Mandraenke-Schicksalhafte-Fluten-1362-und-1634,grotemandraenke101.html

[5]It is a different debate how philosophical, cultural, social or political views of investigators influence, for example, the choice of the research question, object of the study, or study method. Also, the object of a study, method and finding can be described only with finite accuracy. Hence, reproducibility is given 'within error margins'. Finally, scientific knowledge systems constrain the thinkable and evolve (Renn, 2020).

TABLE 2 | The tenets (of the geoethical logic approach) and their expressions as socio-political preferences to shape governance arrangements in complex-adaptive social-ecological systems (adapted from Bohle, 2021).

Tenet of geoethical logic approach focusing on	Meaning	Implying governance & caretaking societies
1. Agency	A framework that invests human agents [#] in acting to their best understanding, balancing (individual) happiness and (individual) duties, and considering the given circumstances, opportunities and purposes;	Societal/cultural/political preferences for a distributed human agency; governance structures that encourage human agents to act in a context-depending manner;
2. Virtue	A corpus of traits (e.g., honesty, integrity, transparency, reliability, a spirit of sharing, cooperation, reciprocity) of a human agent, which furthers operational (handling of things) and social (handling of people) capabilities of the individual/group;	Societal/cultural/political practices (e.g., public and private educational frameworks and modes of cooperation), which (a) favor traits of human agents such as honesty, integrity, transparency, reliability, etc., and (b) suchlike, enhance skills of agents for effective and efficient operational and interpersonal dealings;
3. Responsibility	The outcome of a normative call (internal, external) on a human agent, which frames decisions/acts in terms of accountability for the intended effects, the unintended consequences, and the implications for future generations;	Societal/cultural/political practices (e.g., public and private educational frameworks and modes of cooperation) foster political and social behaviors that value accountability, foresight, and intergenerational justice and caretaking.
4. Knowledgebase	(a) As a foremost instance, knowledge [*] that is acquired by scientific methods; (b) experience-based knowledge [**] is a secondary instance; (c) reproducibility of knowledge by third parties [***] supports trustworthiness rather than an allusion to faith or 'authorities'; [*] any domain of human scientific & scholarly knowledge; Earth system literacy (including geosciences) as *primus inter pares* within STEM; [**] indigenous/traditional/local [***] core of the scientific method, see Bunge's 'synthetic thesis of truth' (Bunge, 2006)	Societal/cultural/political practices (e.g., public and private educational frameworks and modes of decision making), which emphasize 'scientific methods' and 'reproducible knowledge' with particular emphasis on 'Earth science literacy' and dynamics of complex systems;
5. Inclusivity	Achieve a participatory practice (e.g., *'shared social license to operate'*) between various agents by mitigating differentials of power, voice etc. using capacity building;	Societal/cultural/political practices of inclusive political/societal processes and modes of cooperation allow human agents to participate in decision-making and implementation.
6. Universal-rights	Guide affective and rational sensemaking and cooperation of human agents by furthering adherence to human rights (life, liberty, justice) and by strengthening derived norms such as utilitarian, sustainability, precautionary principles or rights of non-human sentient beings and nature;	Societal/cultural/political practices (e.g., public and private educational frameworks and modes of cooperation) that care about governance practices emphasize sensemaking based on human rights.
Comments:	[#] understood as individual, collective, or institutional agent	

happening globally but punctuated by local disasters, and (6) causing people's reactions ranging from fear to denial. It is expected that most of the impacts of anthropogenic global change will share these similarities.

Complex-adaptive dynamics of social-ecological systems, be they featured by the COVID-19 health pandemic or the rise in global mean sea-level, are characterized by a systemic uncertainty about "what happens next" or newly emergent system features. Subsequently, the capabilities to forecast change are limited. The handling of problems is iterative. Solutions are adapted regularly to adjust them to path-dependent and irreversible developments. In the same vein, irregular variability in time and space and difficult-to-discern patterns disorient people and cause frustrations that elites and authorities 'are not getting it right'. Subsequently, decision-makers and managers are challenged for both: making decisions and communicating them. Therefore, maintaining mutual trust is a very high societal value. Experts' culture cannot nourish it. Instead, trust must root in other qualities (Rochira and Salvatore, 2021) and may comprise, for example, an extensive interaction of scientists and citizens (Resnik et al., 2015). Therefore, the geoethical logic approach suggests "virtue," "responsibility," "inclusivity," and "universal-rights" as tenets that guide the human agent to preserve trustworthiness. Hence, trust is not an outcome of proven expertise. Instead, the behavioral traits of the human agent and the manner how expertise is put into practice are building trust.

Being aware of shifting baselines is knowing the *status quo* and *status quo ante*. Humans have difficulties keeping track of baselines (Pauly, 1995; Moore et al., 2019). The slow rise in mains sea-level is a perfect example, e.g., flooding during king-tides in Miami becomes normal (Wdowinski et al., 2016). Subsequently, a sense of urgency and need-for-change is lost, and the public and coordinated response is hampered. In the same vein, when lacking direct (own) experiences of upcoming threats while experiencing insights and behaviors being socially communicated (or coerced) and media-driven, then ample opportunities for distortion, fakes, and active misinformation arise (Salvaore et al., 2019). Therefore, the geoethical logic approach postulates "reproducible knowledge," which might be scientific or scholarly (although it may have other sources) as a vital tenet. It aims to prevent misjudgment by shifting baselines and passive or active misinformation. The tenet enshrines the

reproducibility of knowledge as an essential feature of any critical process of knowledge consolidation.

When understanding local particularities and global patterns, human agents may learn to handle dynamics exhibiting context-dependency and lacking uniformity. In the same vein, shifting baselines and irregular variations trigger spontaneous reactions and, hence, hamper coordinated responses. Also, as said above, the trust in agents handling complex-adaptive dynamics is not rooted in the experience "they got it right last time" because it was no last time to compare with. Any such feature questions the delegation of agency to "authorities." Instead, they call to acquire capability (agency) for local action. Therefore, the geoethical logic suggests investing in the empowerment of human agents, calling for inclusiveness and human rights to shift from a "spontaneous" to a "coordinated" response.

Given a governance perspective, these findings can be aggregated into four pivots for policy-design: "autonomy" and "trustworthiness" of the human agent living in a society with a "scientific culture" and a "culture of inclusive justice."

Schematically:

- Tenet "1" (agency) of the geoethical logic approach indicates to accentuate the "autonomy" (of the human agent), namely to act on own initiative to face (diverse) local circumstances. Subsequently, a culture and governance policy encouraging citizens' emancipation to act must be advocated.
- Tenets "2, 3" and "5" (virtue, responsibility, human rights) of the geoethical logic approach indicates to accentuate "trustworthiness" (of the human agent) despite volatile circumstances. Subsequently, a culture and governance policy encouraging civism/*res publica*/*citoyenneté*/*Bürgersinn* must be advocated.
- Tenet "4" (knowledge) of the geoethical logic approach indicates to accentuate a "scientific culture" with reproducibility of knowledge (e.g., scientific findings) at its core. Subsequently, a culture and governance policy encouraging scientific literacy must be advocated.
- Tenet "5, 6" (inclusivity, human rights) of the geoethical logic approach indicates accentuating a "culture of inclusive justice." Subsequently, a culture and governance policy encouraging systemic citizens' empowerment, caring for all members of society and future generations must be advocated.

Reflecting the design of geoethics, respectively, of the geoethical logic approach, these pivots are a bundle without an internal hierarchy. They set out a sole framework for governance, which shall nurture the "autonomy of trustworthy human agents acting within a society having a scientific culture and a culture of inclusive justice." The agent's trustworthiness is rooted in traits like "virtue" and "responsibility" and practices like "inclusivity" and "universal-rights." The essence of scientific culture emphasizes the reproducibility of findings, which also applies to knowledge systems other than science *per se* (Renn, 2020).

To situate the above within geoethical thinking: Emphasizing autonomy, trustworthiness, and scientific culture encapsulates the conceptual core of geoethics (Peppoloni et al., 2019). Geoethics started as a deontological approach within Earth Sciences. Its subsequent development, including framing by political philosophies, led to more comprehensive application scopes. The geoethical logic is another application-oriented development of geoethics, which does not alter much the underpinning design.

DISCUSSION

Dystopic visions of future worlds are numerous (Cook and Balayannis, 2015; Yusoff, 2018). This essay sketches a concept of governance inspired by geoethical thinking to find alternatives. The vehicle is a specific geo-philosophical framework' (the "geoethical logic approach"), which draws on a variant of philosophy of science, of "responsible Earth-sciences" (geoethics), and three contemporary political philosophies, which address the needs of caretaking societies. Subsequently, societal practices seem possible, which inform human agents how to tackle the impacts of anthropogenic global change. The empowerment of human agents is founded on inter-generational perspectives, concerns for caretaking, learning, participatory practices, and scientifically informed insights into the functioning of the world and nature.

Why "Geo?"

The prefix "geo" of the notions geoethical and geo-philosophical has various connotations. First, it specifies that Earth System literacy is a knowledge domain *primus inter pares* because of the vital expertise in times of anthropogenic global change. Second, the prefix points to the specific knowledge-building process in geo- or Earth-System sciences, determined by dependence on context and path, a multiplicity of methods, and scarce opportunities for controlled experiments. As a philosophy of sciences, this knowledge-building process implements Bunge's "synthetic thesis of truth." Third, the prefix relates to the governance of adaptation to the impacts of anthropogenic global change (e.g., sea-level rise), which should be informed by an ethic of perspectives concerned with Earth and society (geoethics), which applies adaptive, iterative, and synthetic scenario building of possible configurations of the Human-Earth Nexus.

As a word of caution, while emphasizing why the prefix "geo" is used in this essay, the geoethical logic approach implies a comprehensive scientific and scholarly knowledge base extending beyond Earth-/Geosciences. Furthermore, centering on the agency of humans is about unique duties as an intrinsic part of the Earth system. Humans are the species answerable for mismanaging the planet.

Conventional, Innovative, and Incomplete?

The proposed pivots for policy-design might appear conventional, given they are founded on known political philosophies and the concept of responsible sciences. However, innovation is 2-fold.

First, the pivots for policy-design are not hierarchically ordered to shape societal culture(s), public policies, and human agents' actions. Instead, they jointly inform culture, policies,

and action. The goals of "autonomy" and "trustworthiness" (of the human agent) and "scientific culture" and "culture of inclusive justice" (of the society) apply without a pre-established ranking. This feature implies mutatis mutandis, that (cherished Western) concepts like "universal" are to be taken *cum grano salis*. Instead, an aggregating approach of comparative Justice is favored (Sen, 2010) and unbound individual agency is questioned.

Second, the combination of insights, which underpins the pivots, is vital. These are: (1) the reproducibility of knowledge (e.g., scientific), (2) Earth science literacy (essential knowledge domain), (3) the quality of societal coordination (favoring the distribution of power), (4) the responsibility of change agents (favoring intergenerational accountability), and (5) the balance of individual wellbeing and duties (the key-virtues of the human agent).

Despite the substantial sociopolitical embedding, the proposed geoethical logic approach seems incomplete because it is not informed by socioeconomic constraints, which, for example, limit the freedom of human agents. A remedy can be found interpreting Hannah Arendt's political philosophy of the "Human Condition" (Arendt, 1958) for times of anthropogenic global change. Her notions of labor (for subsistence), work (of agents of technological change), and act (political agency) indicate how to complement the geoethical logic approach with insights into what social stratification and differential power might imply for "autonomy" and "inclusivity."

Such amendment of the geoethical logic approach deems needed because inequalities in socio-ecological systems are a critical issue. The preparedness, reactions, mitigation capacities, adaptation capabilities, and decision-making processes will suffer from the inequalities as much as from the hazards. The problem is well-known (McMichael et al., 2004). J. Timmons Roberts asserted that *"Global warming is all about inequality, both in who will suffer most its effects and in who created the problem in the first place"* (Roberts, 2001, p. 501). Beyond sea-level rise and flooding, climate change may affect human health and mortality due to extreme heat and cold waves, climate disasters and changes, the lessening of air and water quality, and changes in the ecology of infectious diseases.

A further open research question is the decision making process, e.g., whether, for example, the human agent needs to make decisions standing behind the Rawls veil (Huang et al., 2019). Recently (Markkanen and Anger-Kraavi, 2019), policymakers were alerted again of the indirect and often complex social and inequality impacts that their decision may have. They suggest that, in all stages of policymaking, the potential impacts inequalities can produce or enhance must be taken into consideration to get better results. In the same vein, *"[p]rojections of the global health effects due to the global climate changes signal a massive impact on the less favored parts of the world"* (Sunyer and Grimalt, 2006, p. 216). In 2021, Brazilian researchers (Rocha et al., 2021) showed, using a Social Vulnerability Index, that in Brazil, the leading risk factor related to COVID-19 are socioeconomic inequalities, rather than age, health status, and other risk factors.

On Divergent Practices and Practical Wisdom

When applying the pivots for policy-design to inform culture and governance, the resulting practices will diverge. This specific feature, different valid approaches, stems from the initial design of geoethics. It arises because of divergent insights and judgements of human agents who handle a non-hierarchical set of guiding principles.

Geoethics and, hence, the pivots for policy-design are not designed to lead to a single or uniform application case. Instead, different valid approaches, which each respects the four pivots, should be plausible. This multitude is essential because it is unlikely that a "best" approach (scenario) exists (and can be found) in contexts determined by complex-adaptive dynamics. Hence, it is the desired design feature to encounter divergent practices or approaches when applying the proposed pivots because *"[t]here may not indeed exist any identifiable perfectly just social arrangement on which impartial agreement would emerge"* (Sen, 2010, p.15).

A plurality of approaches seems favorable when handling complex-adaptive dynamics, although the risk of inconsistent (e.g., arbitrary) choices is inherent, which, in turn, may lead to irreversible developments. Handling complex-adaptive dynamics requires Bayesian-like approaches to operate context-dependent and path-dependent, as well as iteratively; (see for example Fuerth and Faber, 2012; Sharma-Wallace et al., 2018; Janssen and van der Voort, 2020). The combination of framing and plasticity that the geoethical logic approach offers should facilitate handling systemic uncertainty and shifting baselines of complex-adaptive dynamics and, likewise, intermittent and recurrent phenomena. Building the capability to tackle such features (Arroyo, 2017; Stewart and Lewis, 2017; Marone and Bouzo, 2021) is essential to counter attitudes of denial of facts and evidence.

Being able, that is, "having the wisdom," to cope with divergent practices is the essence of cultural/political processes at the Human-Earth Nexus. Therefore, the requirement to meet the pivots for policy-design at any time should frame cultural/political processes while also providing plasticity to adjust practices consistently to different regional impacts and non-uniqueness of adaptation options. Also, media-mediated experiences of the public should be addressed because the pivots for policy-design can nourish a consistent discourse, including persistent debunking of fake news. Finally, considering the overall context of anthropogenic global change (and the specific illustration of "the rise of the main sea-level"), advancing from spontaneous to managed responses should be possible giving the "autonomy" of a trustworthy human agent, who has a "scientific culture" and adheres to a "culture of inclusive justice."

Concluding

When perceived through complex-adaptive dynamics and geo-philosophical concepts, experiences gained in the COVID-19 health pandemic can inform the governance of (some) climate change impacts in the next century. Evolving in the same global, complex-adaptive social-ecological system, the COVID-19 health

pandemic and the rising global mean sea-level have similar systemic features. Hence, the Human-Earth Nexus of challenges and policy options is similar. Therefore, comparable approaches may address the respective global, regional, and local problems.

The proposed geo-philosophical framework merges [geo]science-based insights with the contemporary (political) philosophies of Kohlberg (hierarchy of societal coordination processes), Jonas (intergenerational responsibility of agents of change), and Bunge (balancing individual wellbeing (happiness) and duties). Using them is a choice reflecting our view of what ought to be (morally) valued and what kind of political philosophy can be amalgamated with a [geo]scientific philosophy (geoethics) initially emerging from insights into the functioning of the (physical) Earth System. Other choices would lead to a different geo-philosophical framework. The given choice use an established (best) practice in political philosophy and Earth sciences. Combing both should be of practical wisdom (*phronesis*) to tackle the self-inflicted impacts of anthropogenic global change. The essence of "be practical" is founded on the reproducibility of knowledge (e.g., scientific method), Earth science literacy (knowledge domain), quality of societal coordination (distribution of power), the responsibility of agents of change (intergenerational accountability), and balance of individual wellbeing and duties (virtues of the human agent).

Some may consider the proposed pivots for policy-design to be not more than a "pious" wish in view of open resistance in contemporary societies to evidence and facts. However, it is a proposal (from a geoscience perspective) to counter dystopian visions of future worlds and call to adjust societies' scientific culture (Nagy and Bohle, 2021) and education system (Marone and Bouzo, 2021). It seems appropriate, also drawing on other experiences (Arroyo, 2017), that the successful governance of adaptation to the anthropogenic global change shall emphasize the "autonomy" and "trustworthiness" of the human agent and call for a society with a "scientific culture" and "culture of inclusive justice." Such a geo-philosophical orientation may serve "*[w]hen Humans formed an independent relation with Earth [to be] left to choose between a path of care and a path of neglect*" (Hamilton, 2017, p. 150).

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

MB conceptualized the study. MB and EM developed the matter and wrote the paper. Both authors contributed to the article and approved the submitted version.

REFERENCES

Anderson, R., Patsch, K., Lester, C., and Griggs, G. (2020). Adapting to shoreline retreat: Finding a path forward. *Shore Beach* 88, 13–33. doi: 10.34237/1008842

Angeli, F., and Montefusco, A. (2020). Sensemaking and learning during the Covid-19 pandemic: A complex adaptive systems perspective on policy decision-making. *World Dev.* 136:105106. doi: 10.1016/j.worlddev.2020.105106

Anicich, E. M., Foulk, T. A., Osborne, M. R., Gale, J., and Schaerer, M. (2020). Getting back to the "new normal": Autonomy restoration during a global pandemic. *J. Appl. Psychol.* 105, 931–943. doi: 10.1037/apl0000655

Anurag Danda, A., Ghosh, N., Bandyopadhyay, J., and Hazra, S. (2019). Managed retreat: adaptation to climate change in the Sundarbans ecoregion in the Bengal Delta. *J. Indian Ocean Reg.* 15, 317–335. doi: 10.1080/19480881.2019.1652974

Arendt, H. (1958). *The Human Condition*. Chicago, IL: The University of Chicago Press.

Arroyo, K. K. (2017). Creative policymaking: taking the lessons of creative placemaking to scale. *Artivate J. Arts Innov. Entrep.* 6, 58–72. doi: 10.1353/artv.2017.0000

Barash, J., Brocas, I., Carrillo, J. D., and Kodaverdian, N. (2019). Heuristic to Bayesian: The evolution of reasoning from childhood to adulthood. *J. Econ. Behav. Organ.* 159, 305–322. doi: 10.1016/j.jebo.2018.05.008

Bardach, E. (1987). From practitioner wisdom to scholarly knowledge and back again. *J. Policy Anal. Manag.* 7:188. doi: 10.2307/3323368

Bassett, H. R., Lau, J., Giordano, C., Suri, S. K., Advani, S., and Sharan, S. (2021). Preliminary lessons from COVID-19 disruptions of small-scale fishery supply chains. *World Dev.* 143:105473. doi: 10.1016/j.worlddev.2021.105473

Behrendt, H. (2018). Teilhabegerechtigkeit und das Ideal einer inklusiven Gesellschaft. *Zeitschrift für Prakt. Philos.* 5, 43–72. doi: 10.22613/zfpp/5.1.2

Bennett, N. J., Blythe, J., Cisneros-Montemayor, A. M., Singh, G. G., and Sumaila, U. R. (2019). Just Transformations to Sustainability. *Sustainability* 11:3881. doi: 10.3390/su11143881

Berta, P., Paruolo, P., Verzillo, S., and Lovaglio, P. G. (2020). A bivariate prediction approach for adapting the health care system response to the spread of COVID-19. *PLoS ONE* 15, e0240150. doi: 10.1371/journal.pone.0240150

Beven, K. J., Almeida, S., Aspinall, W. P., Bates, P. D., Blazkova, S., Borgomeo, E., et al. (2018). Epistemic uncertainties and natural hazard risk assessment – Part 1: A review of different natural hazard areas. *Nat. Hazards Earth Syst. Sci.* 18, 2741–2768. doi: 10.5194/nhess-18-2741-2018

Biermann, F. (2014). The Anthropocene: A governance perspective. *Anthr. Rev.* 1, 57–61. doi: 10.1177/2053019613516289

Biggs, R. (2008). *Uncertainty, Learning and Innovation in Ecosystem Management*. ProQuest Diss. Theses. University Wisconsin, Madison, WI, Done.

Biggs, R., Vos, A., de, Preiser, R., Clements, H., Maciejewski, K., and Schlüter, M. (2021). *The Routledge Handbook of Research Methods for Social-Ecological Systems*. London: Routledge doi: 10.4324/9781003021339

Bohle, M. (2020). *Geo-Societal Sense-Making*. London: Spec. Publ. doi: 10.1144/SP508-2019-213

Bohle, M. (2021). A geo-ethical logic for citizens and geoscientists. *Sustain. Water Resour. Manag.* 7:85. doi: 10.1007/s40899-021-00557-1

Bohle, M., and Di Capua, G. (2019). "Setting the scene," in *Exploring Geoethics*, ed M. Bohle (Cham: Springer International Publishing), 1–24. doi: 10.1007/978-3-030-12010-8_1

Bohle, M., Di Capua, G., and Bilham, N. (2019). "Reframing geoethics?" in *Exploring Geoethics*, ed M. Bohle (Cham: Springer International Publishing) 165–174. doi: 10.1007/978-3-030-12010-8_5

Bohle, M., and Ellis, E. C. (2016). "Ethical requirements for applied earth system science and engineering," in *35th International Geological Conference, Geoscience for Society, Global Geoscience Professionalism and Geoethics*. doi: 10.4401/ag-7401

Bohle, M., and Marone, E. (2021). Geoethics, a branding for sustainable practices. *Sustainability* 13:895. doi: 10.3390/su13020895

Bohle-Carbonell, M., and van Senden, D. (1990). *On Internal Seiches and Noisy Current Fields—Theoretical Concepts Versus Observations*. Berlin; Heidelberg: Springer. doi: 10.1007/978-3-642-84077-7_4

Brown, P. G., and Schmidt, J. J. (2014). "Living in the anthropocene: business as usual, or compassionate retreat?" in *State of the World 2014* (Washington, DC: Island Press/Center for Resource Economics), 63–71. doi: 10.5822/978-1-61091-542-7_6

Bunge, M. A. (1980). *'Technoethics', in Ethics in an Age of Pervasive Technology*. New York, NY: Routledge.

Bunge, M. A. (1989). *Treaties on Basic Philosophy -Ethics: The Good and The Right*. Dordrecht: D. Reidel Publishing Company. doi: 10.1007/978-94-009-2601-1

Bunge, M. A. (2006). *Chasing Reality*. St. Toronto: University of Toronto Press. doi: 10.3138/9781442672857

Bunge, M. A. (2017). Evaluating scientific research projects: the units of science in the making. *Found. Sci.* 22, 455–469. doi: 10.1007/s10699-015-9474-3

Capriglione, F. (2020). COVID - 19. What solidarity, what cohesion in the EU? uncertainties and fears. *Law Econ. Yrly. Rev.* 9, 4–60.

Cardoso, E. H. S., Silva, M. S., Da, De Albuquerque Felix Junior, F. E., De Carvalho, S. V., De Carvalho, A. C. P. D. L. F., Vijaykumar, N., et al. (2020). Characterizing the impact of social inequality on COVID-19 propagation in developing countries. *IEEE Access* 8, 172563–172580. doi: 10.1109/ACCESS.2020.3024910

Chowdhury, R., Heng, K., Shawon, M. S. R., Goh, G., Okonofua, D., Ochoa-Rosales, C., et al. (2020). Dynamic interventions to control COVID-19 pandemic: a multivariate prediction modelling study comparing 16 worldwide countries. *Eur. J. Epidemiol.* 35, 389–399. doi: 10.1007/s10654-020-00649-w

Christodoulou, A., Christidis, P., and Demirel, H. (2019). Sea-level rise in ports: a wider focus on impacts. *Marit. Econ. Logist.* 21, 482–496. doi: 10.1057/s41278-018-0114-z

Cimatoribus, A. A., Lemmin, U., Bouffard, D., and Barry, D. A. (2018). Nonlinear dynamics of the nearshore boundary layer of a large lake (Lake Geneva). *J. Geophys. Res. Ocean.* 123, 1016–1031. doi: 10.1002/2017JC013531

Clark, P. U., Shakun, J. D., Marcott, S. A., Mix, A. C., Eby, M., Kulp, S., et al. (2016). Consequences of twenty-first-century policy for multi-millennial climate and sea-level change. *Nat. Clim. Chang.* 6, 360–369. doi: 10.1038/nclimate2923

Coccia, M. (2022). Preparedness of countries to face COVID-19 pandemic crisis: Strategic positioning and factors supporting effective strategies of prevention of pandemic threats. *Environ. Res.* 203:111678. doi: 10.1016/j.envres.2021.111678

Cook, B. R., and Balayannis, A. (2015). Co-Producing (a Fearful) anthropocene. *Geogr. Res.* 53, 270–279. doi: 10.1111/1745-5871.12126

Dachary-Bernard, J., Rey-Valette, H., and Rulleau, et B. (2019). Preferences among coastal and inland residents relating to managed retreat: Influence of risk perception in acceptability of relocation strategies. *J. Environ. Manage.* 232, 772–780. doi: 10.1016/j.jenvman.2018.11.104

Daghriri, T., and Ozmen, O. (2021). Quantifying the effects of social distancing on the spread of covid-19. *Int. J. Environ. Res. Public Health* 18:5566. doi: 10.3390/ijerph18115566

de Graaf, R., van de Giesen, N., and van de Ven, F. (2009). Alternative water management options to reduce vulnerability for climate change in the Netherlands. *Nat. Hazards* 51, 407–422. doi: 10.1007/s11069-007-9184-4

Di Capua, G., Peppoloni, S., and Bobrowsky, P. (2017). The cape town statement on geoethics. *Ann. Geophys.* 60, 1–6. doi: 10.4401/ag-7553

Doberstein, B., Tadgell, A., and Rutledge, A. (2020). Managed retreat for climate change adaptation in coastal megacities: A comparison of policy and practice in Manila and Vancouver. *J. Environ. Manage.* 253:109753. doi: 10.1016/j.jenvman.2019.109753

Donges, J. F., Lucht, W., Müller-Hansen, F., and Steffen, W. (2017). The technosphere in Earth System analysis: A coevolutionary perspective. *Anthr. Rev.* 4, 23–33. doi: 10.1177/2053019616676608

Dundon, L. A., and Abkowitz, M. (2021). Climate-induced managed retreat in the U.S.: A review of current research. *Clim. Risk Manag.* 33:100337. doi: 10.1016/j.crm.2021.100337

Dyer-Witheford, N. (2018). "Struggles in the planet factory: class composition and global warming," in *Interrogating the Anthropocene* (Cham: Springer International Publishing) 75–103. doi: 10.1007/978-3-319-78747-3_2

Egger, D., Miguel, E., Warren, S. S., Shenoy, A., Collins, E., Karlan, D., et al. (2021). Falling living standards during the COVID-19 crisis: Quantitative evidence from nine developing countries. *Sci. Adv.* 7, 1–12. doi: 10.1126/sciadv.abe0997

Fernandes, N. (2020). Economic effects of coronavirus outbreak (COVID-19) on the world economy. *SSRN Electron. J.* 2020:33. doi: 10.2139/ssrn.3557504

Frederikse, T., Landerer, F., Caron, L., Adhikari, S., Parkes, D., Humphrey, V. W., et al. (2020). The causes of sea-level rise since 1900. *Nature* 584, 393–397. doi: 10.1038/s41586-020-2591-3

Fuerth, L. S., and Faber, E. M. H. (2012). *Anticipatory Governance Practical Upgrades: Equipping the Executive Branch to Cope with Increasing Speed and Complexity of Major Challenges*. Washington, DC.

Geological Society of America (1997). *Report on : Geological Society of America (GSA) Presidential Conference on 'Ethics in the Geosciences' (1997)*. Boulder, Colorado.

Gierke, J. (1907). VIII. Chrene cruda und Spatenrecht. *Z. Savigny. Stift. Rechtsgesch. Ger. Abt.* 28, 290–341. doi: 10.7767/zrgga.1907.28.1.290

Grinsted, A., Jevrejeva, S., Riva, R., and Dahl-Jensen, D. (2015). Sea level rise projections for northern Europe under RCP8.5. *Clim. Res.* 64, 15–23. doi: 10.3354/cr01309

Haff, P. K. (2017). Being human in the Anthropocene. *Anthr. Rev.* 4, 103–109. doi: 10.1177/2053019617700875

Hamilton, C. (2017). *Defiant Earth - The Fate of Humans in the Anthropocene*. Cambridge, CA: Wiley, Polity Press.

Hanna, C., White, I., and Glavovic, B. C. (2021). Managed retreats by whom and how? Identifying and delineating governance modalities. *Clim. Risk Manag.* 31:100278. doi: 10.1016/j.crm.2021.100278

Hansen, R. (1894). 'Beiträge zur Geschichte und Geographie Nordfrieslands im Mittelalter', in *Zeitschrift zur SchleswigHolstein-Launenburgische Geschichte* (Kiel: Commissions-Verlag der Universitäts Buchhandling) 1–84.

Hansson, S. O. (2015). *The Role of Technology in Science: Philosophical Perspectives*. Dordrecht: Springer Netherlands. doi: 10.1007/978-94-017-9762-7

Hauer, M. E., Fussell, E., Mueller, V., Burkett, M., Call, M., Abel, K., et al. (2020). Sea-level rise and human migration. *Nat. Rev. Earth Environ.* 1, 28–39. doi: 10.1038/s43017-019-0002-9

Head, B. W., and Xiang, W.-N. (2016). Working with wicked problems in socio-ecological systems: More awareness, greater acceptance, and better adaptation. *Landsc. Urban Plan.* 154, 1–3. doi: 10.1016/j.landurbplan.2016.07.011

Hofstede, J. L. A. (2019a). Küstenschutz in Schleswig-Holstein: ein überblick über Strategien und Maßnahmen. *Die Küste* 87, 287–302. doi: 10.18171/1.087103

Hofstede, J. (2019b). On the feasibility of managed retreat in the Wadden Sea of Schleswig-Holstein. *J. Coast. Conserv.* 23:714. doi: 10.1007/s11852-019-00714-x

Horton, B. P., Khan, N. S., Cahill, N., Lee, J. S. H., Shaw, T. A., Garner, A. J., et al. (2020). Estimating global mean sea-level rise and its uncertainties by 2100 and 2300 from an expert survey. *NPJ Clim. Atmos. Sci.* 3:18. doi: 10.1038/s41612-020-0121-5

Hourdequin, M. (2015). *Environmental Ethics - From Theory to Practice*. London: Bloomsbury Publishing Ülc. doi: 10.5040/9781474236607

Huang, G., and London, J. K. (2016). Mapping in and out of "messes": An adaptive, participatory, and transdisciplinary approach to assessing cumulative environmental justice impacts. *Landsc. Urban Plan.* 154, 57–67. doi: 10.1016/j.landurbplan.2016.02.014

Huang, K., Greene, J. D., and Bazerman, M. (2019). Veil-of-ignorance reasoning favors the greater good. *Proc. Natl. Acad. Sci. U.S.A.* 116, 23989–23995. doi: 10.1073/pnas.1910125116

Janssen, M., and van der Voort, H. (2020). Agile and adaptive governance in crisis response: Lessons from the COVID-19 pandemic. *Int. J. Inf. Manage.* 55:102180. doi: 10.1016/j.ijinfomgt.2020.102180

Jonas, H. (1979). *Das Prinzip Verantwortung: Versuch einer Ethik für die technologische Zivilisation*. Frankfurt am Main: Insel-Verlag.

Jonas, H. (1980). *'The Heuristics of Fear', in Ethics in an Age of Pervasive Technology*. New York, NY: Routledge.

Jones, L. P., Turvey, S. T., Massimino, D., and Papworth, S. K. (2020). Investigating the implications of shifting baseline syndrome on conservation. *People Nat.* 2, 1131–1144. doi: 10.1002/pan3.10140

Kato, S., and Ahern, J. (2008). 'Learning by doing': adaptive planning as a strategy to address uncertainty in planning. *J. Environ. Plan. Manag.* 51, 543–559. doi: 10.1080/09640560802117028

Kleinhans, M. G., Buskes, C. J. J., and de Regt, H. W. (2010). "Philosophy of earth science," in *Philosophies of the Sciences*, ed F. Allhoff (Oxford: Wiley-Blackwell) 213–236. doi: 10.1002/9781444315578.ch9

Kohlberg, L. (1981). *The Philosophy of Moral Development: Moral Stages and the Idea of Justice*. San Francisco, CA: Harber & Row.

Kool, R., Lawrence, J., Drews, M., and Bell, R. (2020). Preparing for sea-level rise through adaptive managed retreat of a new zealand stormwater and wastewater network. *Infrastructures* 5:92. doi: 10.3390/infrastructures5110092

Koppes, M., and King, L. (2020). Beyond x,y,z(t); navigating new landscapes of science in the science of landscapes. *J. Geophys. Res. Earth Surf.* 125:588. doi: 10.1029/2020JF005588

Kranzberg, M. (2019). *Ethics in an Age of Pervasive Technology*. New York, NY: Routledge. doi: 10.4324/9780429051692

Kuhlmann, S., Hellström, M., Ramberg, U., and Reiter, R. (2021). Tracing divergence in crisis governance: responses to the COVID-19 pandemic in France, Germany and Sweden compared. *Int. Rev. Adm. Sci.* 2021:002085232097935. doi: 10.1177/0020852320979359

Kulp, S. A., and Strauss, B. H. (2019). New elevation data triple estimates of global vulnerability to sea-level rise and coastal flooding. *Nat. Commun.* 10:4844. doi: 10.1038/s41467-019-12808-z

Leardini, M. (2017). *Les réfugiés climatiques*. Université Catholique de Louvain, Louvain-la-Neuve.

Leuven, J. R. F. W., Pierik, H. J., Vegt, M., van der, Bouma, T. J., and Kleinhans, M. G. (2019). Sea-level-rise-induced threats depend on the size of tide-influenced estuaries worldwide. *Nat. Clim. Chang.* 9, 986–992. doi: 10.1038/s41558-019-0608-4

Lincke, D., and Hinkel, J. (2021). Coastal migration due to 21st century sea-level rise. *Earth's Futur.* 9:1965. doi: 10.1029/2020EF001965

Lindholt, M. F., Jørgensen, F., Bor, A., and Petersen, M. B. (2021). Public acceptance of COVID-19 vaccines: cross-national evidence on levels and individual-level predictors using observational data. *BMJ Open* 11:e048172. doi: 10.1136/bmjopen-2020-048172

Lo, A. W., and Zhang, R. (2021). The evolutionary origin of Bayesian heuristics and finite memory. *iScience* 24:102853. doi: 10.1016/j.isci.2021.102853

Markkanen, S., and Anger-Kraavi, A. (2019). Social impacts of climate change mitigation policies and their implications for inequality. *Clim. Policy* 19, 827–844. doi: 10.1080/14693062.2019.1596873

Marone, E., and Bohle, M. (2020). Geoethics for nudging human practices in times of pandemics. *Sustainability* 12:7271. doi: 10.3390/su12187271

Marone, E., and Bouzo, M. (2021). *Humanistic Geosciences: A Cultural and Educational Construction*. Cham: Springer International Publishing. doi: 10.1007/978-3-030-79028-8_15

Marone, F. (2021). Hate in the time of coronavirus: exploring the impact of the COVID-19 pandemic on violent extremism and terrorism in the West. *Secur. J.* doi: 10.1057/s41284-020-00274-y. [Epub ahead of print].

Marone, L., Lopez de Casenave, J., and González del Solar, R. (2019). The synthetic thesis of truth helps mitigate the "reproducibility crisis" and is an inspiration for predictive ecology. *Humanit. J. Valparaiso* 2019, 363–376. doi: 10.22370/rhv2019iss14pp363-376

Masson-Delmotte, V., Zhai, P., Pirani, A., Connors, S. L., Péan, C., Berger, S., et al. (2021). *IPCC, 2021: Summary for Policymakers*. Cambridge.

McMichael, A., Campbell-Lendrum, D., Kovats, S., Edwards, S., Wilkinson, P., Wilson, T., et al. (2004). "Global climate change," in *Comparative Quantification of Health Risks: Global Regional Burden of Diseases Due to Selected Major Risk Factors Comparative Quantification of Health Risks: Global Regional Burden of Diseases Due to Selected Major Risk Factors*, eds. M. Ezzati, A. D. Lopez, A. Rodgers, and C. J. Murrgay (WHO) 1543–1649.

Mees, H. L. P., Driessen, P. P. J., and Runhaar, H. A. C. (2014). Legitimate adaptive flood risk governance beyond the dikes: the cases of Hamburg, Helsinki and Rotterdam. *Reg. Environ. Chang.* 14, 671–682. doi: 10.1007/s10113-013-0527-2

Merriam, D. (2020). The pandemic and the failure to plan: we can do better. *The Urban Lawyer* 50, 401–414. Available online at: https://heinonline.org/HOL/LandingPage?handle=hein.journals/urban50&div=19&id=&page=

Mogk, D. (2018). Geoethics and professionalism: the responsible conduct of scientists. *Ann. Geophys.* 60:7584. doi: 10.4401/ag-7584

Mogk, D. W. (2020). *The Intersection of Geoethics and Diversity in the Geosciences*. London: Special Publications. doi: 10.1144/SP508-2020-66

Moore, F. C., Obradovich, N., Lehner, F., and Baylis, P. (2019). Rapidly declining remarkability of temperature anomalies may obscure public perception of climate change. *Proc. Natl. Acad. Sci. U.S.A.* 2019:201816541. doi: 10.1073/pnas.1816541116

Muiderman, K., Gupta, A., Vervoort, J., and Biermann, F. (2020). Four approaches to anticipatory climate governance: Different conceptions of the future and implications for the present. *Wiley Interdiscip. Rev. Clim. Chang.* 11, 1–20. doi: 10.1002/wcc.673

Munene, M. B., Swartling, Å. G., and Thomalla, F. (2018). Adaptive governance as a catalyst for transforming the relationship between development and disaster risk through the Sendai Framework? *Int. J. Disaster Risk Reduct.* 28, 653–663. doi: 10.1016/j.ijdrr.2018.01.021

Nagy, G. M., and Bohle, M. (2021). *Geo-scientific Culture and Geoethics*. Cham: Springer International Publishing. doi: 10.1007/978-3-030-79028-8_14

Nunn, P. D., Kohler, A., and Kumar, R. (2017). Identifying and assessing evidence for recent shoreline change attributable to uncommonly rapid sea-level rise in Pohnpei, Federated States of Micronesia, Northwest Pacific Ocean. *J. Coast. Conserv.* 21, 719–730. doi: 10.1007/s11852-017-0531-7

Pauly, D. (1995). Anecdotes and the shifting baseline syndrome of fisheries. *Trends Ecol. Evol.* 10:430. doi: 10.1016/S0169-5347(00)89171-5

Peppoloni, S., Bilham, N., and Di Capua, G. (2019). *Contemporary Geoethics Within the Geosciences*. Cham: Springer International Publishing. doi: 10.1007/978-3-030-12010-8_2

Peppoloni, S., and Di Capua, G. (2012). Geoethics and geological culture: Awareness, responsibility and challenges. *Ann. Geophys.* 55, 335–341. doi: 10.4401/ag-6099

Peppoloni, S., and Di Capua, G. (2021). Geoethics to start up a pedagogical and political path towards future sustainable societies. *Sustainability* 13:10024. doi: 10.3390/su131810024

Phillips, J. (2012). Storytelling in Earth sciences: The eight basic plots. *Earth-Science Rev.* 115, 153–162. doi: 10.1016/j.earscirev.2012.09.005

Piguet, E. (2019). Climatic statelessness: risk assessment and policy options. *Popul. Dev. Rev.* 45, 865–883. doi: 10.1111/padr.12295

Pilkey, O. H., and Pilkey, K. C. (2019). *Sea Level Rise - A Slow Tsunami on America's Shores*. Durham: Duke University Press. doi: 10.1215/9781478005124

Plenge, D. (2020). *Big Problems Come in Bundles, Huge Nonsense Comes in Heaps, and Great Transformations Need Sound Philosophical Foundations*. Available online at: https://www.oulu.fi/blogs/bunge (accessed February 23, 2021).

Preiser, R., Biggs, R., De Vos, A., and Folke, C. (2018). Social-ecological systems as complex adaptive systems: organizing principles for advancing research methods and approaches. *Ecol. Soc.* 23:art46. doi: 10.5751/ES-10558-230446

Preiser, R., Biggs, R., Hamann, M., Sitas, N., Selomane, O., Waddell, J., et al. (2021). Co-exploring relational heuristics for sustainability transitions towards more resilient and just Anthropocene futures. *Syst. Res. Behav. Sci.* 2021, 1–10. doi: 10.1002/sres.2815

Preiser, R., Pereira, L. M., and Biggs, R. (2017). Navigating alternative framings of human-environment interactions: variations on the theme of 'Finding Nemo'. *Anthropocene* 20, 83–87. doi: 10.1016/j.ancene.2017.10.003

Rasmussen, D. J., Bittermann, K., Buchanan, M. K., Kulp, S., Strauss, B. H., Kopp, R. E., et al. (2018). Extreme sea level implications of 1.5 °C, 2.0 °C, and 2.5 °C temperature stabilization targets in the 21st and 22nd centuries. *Environ. Res. Lett.* 13:034040. doi: 10.1088/1748-9326/aaac87

Reddy, P. S. (2020). *Good Public Governance in a Global Pandemic*. Brusseles: The International Institute of Administrative Sciences. doi: 10.46996/pgs.v1e1

Reicher, S., and Stott, C. (2020). On order and disorder during the COVID-19 pandemic. *Br. J. Soc. Psychol.* 59, 694–702. doi: 10.1111/bjso.12398

Renn, J. (2020). *The Evolution of Knowledge - Rethinking Science for the Anthropocene*. Oxford: Princeton University Press. doi: 10.1515/9780691185675

Resnik, D. B., Elliott, K. C., and Miller, A. K. (2015). A framework for addressing ethical issues in citizen science. *Environ. Sci. Policy* 54, 475–481. doi: 10.1016/j.envsci.2015.05.008

Robert, R., Kentish-Barnes, N., Boyer, A., Laurent, A., Azoulay, E., and Reignier, J. (2020). Ethical dilemmas due to the Covid-19 pandemic. *Ann. Intensive Care* 10:84. doi: 10.1186/s13613-020-00702-7

Roberts, J. T. (2001). Global inequality and climate change. *Soc. Nat. Resour.* 14, 501–509. doi: 10.1080/08941920118490

Robie, D. (2021). (New) ecological problems: post-pandemic climate change remains an oceania existential threat. *IKAT Indones. J. Southeast Asian Stud.* 4:129. doi: 10.22146/ikat.v4i2.59677

Robinson, A., Lehmann, J., Barriopedro, D., Rahmstorf, S., and Coumou, D. (2021). Increasing heat and rainfall extremes now far outside the historical climate. *NPJ Clim. Atmos. Sci.* 4:45. doi: 10.1038/s41612-021-00202-w

Rocha, R., Atun, R., Massuda, A., Rache, B., Spinola, P., Nunes, L., et al. (2021). Effect of socioeconomic inequalities and vulnerabilities on health-system preparedness and response to COVID-19 in Brazil: a comprehensive analysis. *Lancet Glob. Heal.* 9, e782–e792. doi: 10.1016/S2214-109X(21)00081-4

Rochira, A., and Salvatore, S. (2021). *How to Promote Responsible Conducts Towards the Environment: A Semiotic Cultural Psychological Analysis*. Cham: Springer International Publishing. doi: 10.1007/978-3-030-79028-8_7

Salvaore, S., Fini, V., Mannarini, T., and Valsiner, J. (2019). *Symbolic Universes in Time of (Post)Crisis*. Cham: Springer International Publishing. doi: 10.1007/978-3-030-19497-0

Santos-Carrillo, F., Fernández-Portillo, L. A., and Sianes, A. (2020). Rethinking the governance of the 2030 agenda for sustainable development in the COVID-19 era. *Sustainability* 12:7680. doi: 10.3390/su12187680

Sarry, S. M., Anggreiny, N., and Mafaza (2021). Responding to uncertainty caused by Covid−19. *IOP Conf. Ser. Earth Environ. Sci.* 708:012095. doi: 10.1088/1755-1315/708/1/012095

Schlüter, M., Haider, L. J., Lade, S. J., Lindkvist, E., Martin, R., Orach, K., et al. (2019). Capturing emergent phenomena in social-ecological systems: an analytical framework. *Ecol. Soc.* 24:art11. doi: 10.5751/ES-11012-240311

Schröder-Bäck, P., Schloemer, T., Martakis, K., and Brall, C. (2020). The ethics of pandemic preparedness revisited - autonomy, quarantine, transferability and trust. *Eur. J. Public Health* 30:182. doi: 10.1093/eurpub/ckaa166.182

Sen, A. (2010). *The idea of Justice*. London: Penguin Books. doi: 10.2307/j.ctvjnrv7n

Sharma-Wallace, L., Velarde, S. J., and Wreford, A. (2018). Adaptive governance good practice: Show me the evidence! *J. Environ. Manage.* 222, 174–184. doi: 10.1016/j.jenvman.2018.05.067

Shaw, R., Kim, Y., and Hua, J. (2020). Governance, technology and citizen behavior in pandemic: Lessons from COVID-19 in East Asia. *Prog. Disaster Sci.* 6:100090. doi: 10.1016/j.pdisas.2020.100090

Shu, Q., and Wang, Y. (2021). Collaborative leadership, collective action, and community governance against public health crises under uncertainty: a case study of the Quanjingwan community in China. *Int. J. Environ. Res. Public Health* 18:598. doi: 10.3390/ijerph18020598

Siders, A. R. (2019). Managed retreat in the United States. One *Earth* 1:8. doi: 10.1016/j.oneear.2019.09.008

Siders, A. R., and Ajibade, I. (2021). Introduction: Managed retreat and environmental justice in a changing climate. *J. Environ. Stud. Sci.* 11, 287–293. doi: 10.1007/s13412-021-00700-6

Simonelli, A. C. (2021). Climate displacement and the legal gymnastics of justice: is it all political? *Ethics Int. Aff.* 35, 303–312. doi: 10.1017/S0892679421000344

Sterr, H. (2008). Assessment of vulnerability and adaptation to sea-level rise for the coastal zone of Germany. *J. Coast. Res.* 242, 380–393. doi: 10.2112/07A-0011.1

Stewart, I. S., and Lewis, D. (2017). Communicating contested geoscience to the public: Moving from 'matters of fact' to 'matters of concern'. *Earth-Science Rev.* 174, 122–133. doi: 10.1016/j.earscirev.2017.09.003

Sunyer, J., and Grimalt, J. (2006). Global climate change, widening health inequalities, and epidemiology. *Int. J. Epidemiol.* 35, 213–216. doi: 10.1093/ije/dyl025

Termeer, C. J. A. M., Dewulf, A., Breeman, G., and Stiller, S. J. (2015). Governance capabilities for dealing wisely with wicked problems. *Adm. Soc.* 47, 680–710. doi: 10.1177/0095399712469195

Termeer, C. J. A. M., Dewulf, A., Karlsson-Vinkhuyzen, S. I., Vink, M., and van Vliet, M. (2016). Coping with the wicked problem of climate adaptation across scales: The Five R Governance Capabilities. *Landsc. Urban Plan.* 154, 11–19. doi: 10.1016/j.landurbplan.2016.01.007

Thomas, K. A. (2020). Shifting baselines of disaster mitigation. *Clim. Dev.* 12, 147–150. doi: 10.1080/17565529.2019.1605875

Tibaldeo, R. F. (2015). The heuristics of fear: can the ambivalence of fear teach us anything in the technological age? *ETHICS Prog.* 6, 225–238. doi: 10.14746/eip.2015.1.9

Tiggeloven, T., Couasnon, A., van Straaten, C., Muis, S., and Ward, P. J. (2021). Exploring deep learning capabilities for surge predictions in coastal areas. *Sci. Rep.* 11:17224. doi: 10.1038/s41598-021-96674-0

Tol, R. S. J., Klein, R. J. T., and Nicholls, R. J. (2008). Towards successful adaptation to sea-level rise along Europe's coasts. *J. Coast. Res.* 242, 432–442. doi: 10.2112/07A-0016.1

Trischler, H., and Will, F. (2017). Technosphere, technocene, and the history of technology. *Icon* 23, 1–17.

United Nations, (2013). *World Social Science Report 2013*. UNESCO OECD Publishing.

van Staveren, M. F., and van Tatenhove, J. P. M. (2016). Hydraulic engineering in the social-ecological delta: understanding the interplay between social, ecological, and technological systems in the Dutch delta by means of delta trajectories. *Ecol. Soc.* 21:art8. doi: 10.5751/ES-08168-210108

Vasconcelos, C., and Orion, N. (2021). Earth science education as a key component of education for sustainability. *Sustain.* 13:1316. doi: 10.3390/su13031316

Walker, B., Carpenter, S. R., Folke, C., Gunderson, L., Peterson, G. D., Scheffer, M., et al. (2020). Navigating the chaos of an unfolding global cycle. *Ecol. Soc.* 25:art23. doi: 10.5751/ES-12072-250423

Wdowinski, S., Bray, R., Kirtman, B. P., and Wu, Z. (2016). Increasing flooding hazard in coastal communities due to rising sea level: Case study of Miami Beach, Florida. *Ocean Coast. Manag.* 126, 1–8. doi: 10.1016/j.ocecoaman.2016.03.002

Witze, A. (2018). Attack of the extreme floods. *Nature* 555, 156–158. doi: 10.1038/d41586-018-02745-0

Woermann, M., Human, O., and Preiser, R. (2018). General Complexity: A philosophical and critical perspective. *Emerg. Complex. Organ.* 2018, 1–18.

Yusoff, K. (2018). *A Billion Black Anthropocenes or None*. Forerunner: The University of Minnesota Press. doi: 10.5749/9781452962054

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Which Nationalism for the Anthropocene? A Comparative Study of Exemplary Green Nation-States

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This article poses, and attempts to answer, two correlated questions: (1) Is nationalism, the dominant ideology in our world of nation-states, compatible with the struggle to halt or minimize climate change and related environmental catastrophes? and (2) Which form(s) of government, whether or not informed by nationalist ideology, could better address the most serious threat to human life that currently appears on the horizon? This article puts forward the claim that while the former question has only recently begun to be explored in a few essays and articles devoted to analyzing the linkages between nationalism and climate change, the latter remains unexplored. Attempting to fill this gap, we investigate case studies of exemplary nation-states that periodically scored the highest in the Environmental Performance Index (EPI) and the Climate Change Performance Index (CCPI): Scandinavian countries (Norway, Sweden, Denmark), Switzerland, and Germany. Their cities received environmental awards (i.e., the European Green Capital Award) and registered the highest levels in terms of citizen satisfaction. The goal is to identify factors and (pre)conditions that make forms of "green nationalism" possible.

Keywords: climate change, nationalism, sustainability, green policy, Anthropocene age, Anthropocene, nation state

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INTRODUCTION

Climate change is rapidly becoming the greatest threat to the stability of contemporary societies in the near, rather than distant, future. It is accompanied by a series of concomitant crises, such as biodiversity loss and mass extinction, interruption of food chains, pandemics, overpopulation, the omnipresence of micro-plastics, and air and water pollution, which seem to require a huge effort of cooperation between nation-states if they are to be tackled. As Ulrich Beck put it when conceptualizing his cosmopolitan imperative: cooperate or fail! (Beck, 2011). Easier said than done. No study has so far theorized, or even described, how this could happen—whether certain preconditions are needed so that said collaboration between the many actors that concur with the climate crisis can successfully be carried out, or how best to address such a complex problem from the various perspectives of local, state, and supranational governments.

We need to start by acknowledging two fundamental postulates: (1) our world is dominated by nationalism as the "dominant mode of political legitimacy and collective subjectivity in the modern era" (Malešević, 2019, p. 17); and (2) the nation-state is "the dominant political reality of our time" (Brubaker, 2015, p. 115). Although nationalism is a predominant force in our societies, no study has addressed climate change from the perspective of nationalism theories till 2020. Before 2020, the geo-historical notion of Anthropocene did not appear in any of the issues of the main

journals dedicated to nationalism studies (*Nations and Nationalism; Ethnicities; Nationalism and Ethnic Politics; Ethnopolitics; SEN—Studies in Ethnicity and Nationalism; Nationalities Papers*); the first mention appeared that year in *Nationalities Papers* (Conversi, 2020b). This lack of attention can be seen across the entire field of nationalism studies, which lags far behind most other (inter)disciplinary fields in the social and political sciences (Conversi, 2020b; Zalasiewicz et al., 2021). At the time of writing, the issue has not been substantially discussed or theorized.

Among the few exceptions, Thomas Eriksen has identified the main outlines of the Anthropocene in the way "the human footprint is visible everywhere owing to an exponential increase of human activities, premised on population growth and technological innovations fuelled by non-renewable energy sources and leading to short-term environmental degradation and long-term climate change". (Eriksen, 2021a, p. 131).

Another exception is the world historian Prasenjit Duara who, more recently, wrote from a subaltern perspective on nationalism and climate change as part of the interlinked crises of global modernity (Duara, 2021).

The lack of bridges between nationalism theories and climate change studies is relevant for various reasons. First, while climate change affects all forms of life, it has particularly ominous implications for ethnic minorities, which are beginning to be deeply affected in many areas of the world (Doherty and Clayton, 2011), from Indigenous Peoples (Baird, 2008), to the urban poor and peasants (McKeon, 2015), with specific vulnerability spots situated in the Tropics (Loh and Harmon, 2005; Corlett, 2012) and increasingly elsewhere.

A question spontaneously arises: Can the response to the challenge be addressed through the lens of nationalism theories? One of the problems here is that global risks such as climate change (but also pandemics) are fought primarily as national threats within national borders, although they are clearly transnational in nature and consequences. One of the major threats to international treaties on climate change, such as the Paris Agreement adopted in 2015, is undoubtedly what we could call the principle of "national priority", which means that nation-states principally worry about matters of internal security, domestic homogeneity, and national growth, and less about global issues and other nations' troubles (Posocco and Watson, 2022). This is one of the reasons why climate change is often fought as a national struggle and only secondarily as a global one.

In some cases, national priority suggests not joining the fight on climate change. This is the case when espousing environmental ideology poses a threat to a nation's economic prospects (e.g., to stop using fossil fuels is a direct economic threat to traditional petroleum exporting countries (OPEC) such as Iran, Iraq, and Libya). Here, we are faced with what has been defined as resource nationalism (RN): 'a form of nationalist rhetoric that uplifts and sacralizes soil-rooted national resources as a common good even though only a tiny minority of the population actually benefits from their extraction and exploitation' (Conversi, 2020b, p. 630). Beside petroleum exporting countries, Brazil's rapid deforestation of Amazonia is another example of RN. This form of nationalism is particularly performative in downplaying the global effects of the exploitation of national resources, claiming that it is done for a greater good (the nation's good) and deemed necessary to keep the economy going. While more studies are needed that investigate the ways in which nations respond to global threats in nationalist rather than international ways, these responses tend to be much more national than international in orientation.[1] The ongoing COVID-19 pandemic is a good example of how each nation-state responds to global threats differently with the goal of preserving their own health system and wider society above others. It shows how strong nation-states and nationalist discourses are and how pervasive nationalist ideology is. Here, the question is whether nationalism and the nation-state can change, and how climate change can be addressed more effectively so that it is less prone to national priority.

This article is divided into three parts: The first part introduces the general context by highlighting the challenge, whose contours might still be unclear among nationalism scholars. The second part deals with the two key initial questions: whether nationalism is a major obstacle to the adoption of global, effective, and broadly coordinated mitigation strategies; and whether current institutional settings can deliver on these. The third part identifies what we'll call "exemplary" nation-states, those that have achieved the highest levels of sustainability. The study of these nation-states is aimed to identify the factors and preconditions that can make "green" forms of nationalism possible.

THE SCIENCE BEHIND THE CHANGE

Anthropocene is a neologism created to define the effects of human activities on the planet; in particular it indicates how humankind is shaping the Earth's geology in an irreversible way (Crutzen and Stoermer, 2000; Steffen and Crutzen, 2007). The Anthropocene is characterized by the earth-shattering impact of industrial activity, large-scale industrial agriculture, and mass consumption. It is a broad concept in which climate change plays a pivotal role as its primary vector.[2] In the 1960s, mass consumerism began to pervade all aspects of life in the West, and then in the East, leading to a sudden acceleration in the noxious gases released into the atmosphere (Syvitski et al., 2020). In the second half of the 20th century and early 21st century, economic growth led to "extraordinary human energy consumption" (Syvitski et al., 2020).

Recent path-breaking research has dated the beginning of the Anthropocene to the years of the economic "boom", the 1950s and 1960s (McNeill and Engelke, 2016). This path to destruction is based on the imaginary cornucopia of infinite capital expansion, as it spread from the USA to Europe, China, India, and beyond. Its economic core was based on practices of market expansion, which led to the release of more and

[1] See Goldin's 'Divided Nations: Why global governance is failing and what can be done about it?' for an exhaustive reading on how international organizations, so far, have failed in tackling climate change.

[2] The Anthropocene boundary is a 'formal chronostratigraphic unit – defined by a GSSP, a Global Boundary Stratotype Section and Point' (Waters et al., 2016).

more megatons of industrial *emissions* as well as waste onto the Earth's surface.

The unprecedented emergency created by the expansion of the American/Western model of mass consumption is so radical and widespread, and its effects so disastrous on both the short-term and the long-term, that it needs to be tackled with urgency. This has proved impossible to date, because efforts to break away from the current development path are often blocked by a gridlock of nation-state boundaries, whose governments are aligned with interest groups that do not hesitate to use nationalism to advance their interests, for corporate or personal profit.

Finally, the "economic boom" of the post-1960 acceleration can be put into historical perspective by introducing a third concept, the notion of "*acceleration of acceleration*" (Eriksen, 2009, 2016, 2021a) based on an "extraordinary human consumption of energy" in the second half of the twentieth century and the beginning of the acceleration of acceleration (Syvitski et al., 2020). Although the recently proposed beginning dates back to 1950, the increase in GHGs peaked after 1970 and began to accelerate in the 1980s and even more so in the 1990s, after the fall of the Iron Curtain. More energy has been consumed in the past 70 years than in the entire Holocene, while global average atmospheric temperatures have risen by a staggering 0.9°C over the past 70 years. Less than 1°C seems a trifling amount, but if our own average temperature were to rise by 1°C without us being able to lower it we would all live in perpetual fever! In this case the planet already has a fever, and so far we haven't been able to lower it.

Moreover, the amount of ∼ 22 zettajoule (ZJ; one ZJ is equal to one sextillion joules) accumulated over the past 40 years exceeds that of the previous 11,700 Holocene years (∼14.6 ZJ), mainly as a result of the consumption of fossil fuels. Over 90% of the excess energy ends up in, and is temporarily absorbed by, the oceans, whose temperatures are rising rapidly. This gigantic amount of heat corresponds to about five Hiroshima atomic bombs per second. In his book *Overheating*, the Norwegian anthropologist Thomas Hylland Eriksen describes this phenomenon of increasing acceleration well (Eriksen, 2009, 2016, 2021b; Eriksen and Schober, 2017).

The unprecedented emergency created by the expansion of the US model of mass consumption is therefore so critical that it is now necessary to involve all political forces in the establishment of an international simultaneity and synergy to address the problem in a reasonably quick time. However, this has so far been impossible.

CLIMATE CHANGE AND NATIONALISM

Nationalism is arguably the dominant ideology in contemporary society (Conversi, 2010, 2012, 2014; Malešević, 2019), and it seems to be here to stay (Tamir, 2020). Given the ubiquity and endurance of nationalism, we need to explore whether it is conceivable that there are forms of it that can successfully tackle climate change (Conversi and Friis Hau, 2021). The question is legitimate. For Held (2010) the nation-state is inadequate, in its present forms, to handle global commons such as the spread of disease, pandemics, epidemics, poverty, conflicts, toxic disposal, and certainly climate change. Even a superficial look at the current COVID-19 pandemic shows the confusion that reigned: disagreement, little cooperation, and even attempts at discrediting other nation-states for the methods they used to halt the virus. These are evidences largely acknowledged by the World Health Organization (WHO), which warned about signs of stigma and politicization of the pandemic (WHO, 2020). Like the pandemic, climate change also remains a highly politicized phenomenon (Jamieson, 2014). As with the pandemic, marked by rich nation-states racing to buy their way out of the crisis before poor ones by gaining for themselves the first doses of vaccines,[3] climate change also threatens the poor first. It isn't difficult to imagine what will happen when catastrophic events hit with more intensity than they already do now—when vast stretches of the earth become uninhabitable, plagued by extreme weather, drought, rising seas, and crop failure (Chomsky and Pollin, 2020). The 'uninhabitable Earth' is a possibility, in which nations and nation-states will de facto cease to exist (Wallace-Wells, 2019).

The problem is that climate change and other crises cannot be tackled without combining a diversified set of policies at every level of government and governance. Yet, all these spheres are interconnected and nationalism can (and does) pose a major threat and risk to the sine qua non of international coordination and equal access to resources. Is there any way out from the impasse?

Some have pointed to cosmopolitanism (Calhoun, 2003; Beck, 2004, 2016; Beck and Sznaider, 2006), or "survival cosmopolitanism" (Conversi, 2012, 2020b). These authors argue that cosmopolitanism in a political sense, thus including *kosmos*—meaning "everybody"—and opposing the limitations of *éthnos*—meaning the nation—would bring a more cooperative, inclusive, coordinated, and solidaristic global order, which is needed to cope with global threats. The augmented capacity in terms of cooperation that a cosmopolitan world of cooperative societies might achieve is a potential answer to the problems posed by nationalism. And yet, evoking a cosmopolitan utopia doesn't solve divisions based on ethnic and national logics; it doesn't make national ideology disappear, nor does it increase nation-states' solidarity. When it comes to climate change, the problem is that it is often seen and discussed as a matter of global concern, but national ideology didn't develop to provide answers to global issues. Indeed, nationalism was born primarily "as a force for mobilizing people and legitimizing their emancipation, as an identity giver, and as an ideology that enhances micro-solidarity, not to solve global issues" (Posocco and Watson, 2022, p. 6). For this reason, nation-states are more concerned about national priorities, and often in the short term, given that most national elections happen every 3–5 years. That said, the available literature on cosmopolitanism doesn't inform us about how this ideology would materially supplant nationalism, national electoral systems, vast and historically grounded national narratives, and myths of descent as well as the

[3]Data shows that in February 2021 over three-quarters of vaccines were available in just 10 countries that account for 60% of global GDP (WHO, 2021).

many national institutions such as national academies, national theaters and museums, and national sports (just to mention a few). Perhaps alternatives to cosmopolitanism are needed.

One of those alternatives comes from the study of *Green Nationalism* (GN) (Conversi, 2020b, 2021b, 2022; Conversi and Friis Hau, 2021), a form of nationalism that supports national sustainability. Rather than exploiting nature for nationalistic purposes, GN is characterized by policies that safeguard the environment and ecosystems. One of the problems of GN is that so far it has been identified in sub-state nationalist parties acting in the name of some minority or stateless nations, such as Scotland (Brown, 2017) and Catalonia (Conversi and Friis Hau, 2021)—but not in all of them—and in some case enacting very weak environmental legislation (Conversi and Ezeizabarrena, 2019). The former have championed the environment not only for the environment's sake but also to pursue their own interests. Stateless nations embrace GN and use it as a weapon against those in power, especially by incarnating the habitus of environmental champions and portraying their political antagonist as inefficient and/or careless toward it. One of the features of GN is that it loses its push when its advocates reach their goals, i.e., when they gain political representation (Conversi, 2020b). However, forms of Green Nationalism do exist that, as the case study of Germany shows (Posocco and Watson, 2022), can overcome the limits of resource nationalism as well as forms of ecologism and environmentalism that have proved unsuccessful. Countries such as Switzerland (Salvi and Syz, 2011), Denmark (Ingebritsen, 2012), Sweden (Anselm et al., 2018; Kaijser and Heidenblad, 2018) and Finland (Ridanpää, 2021) have taken paths that seem to be similar to Germany. The comparative study of these countries is functional to identifying elements that characterize Green Nationalism.

The underlying reason for such an endeavor is that, if nationalism is here to stay (Tamir, 2020), we'd better find versions of it that allow for positive developments against climate change. After all, many studies posit that nationalism is not solely about violence (Maleševic, 2013; Harari, 2019). It's appalling reputation might well come from the events that it is most known for: the two world wars that characterized the 20th century, with a huge number dying and unprecedented brutalities in the Holocaust. (Fascism and Nazism, perhaps the two most extreme forms of nationalism, were unthinkable without the previous cataclysm of WW1, which can be described as the nationalist war par excellence).

More recently, nationalist developments in other contexts and regions such as in ex-Yugoslavia and after the collapse of the Soviet Union have meant that when the word "nationalism" is used, it does not evoke positive emotions. Indeed, adjectives such as "extreme" or "violent" are often used to identify nationalism and highlight its negative aspects. Evidence from recent research supports the thesis that bureaucratic pressure and mass mobilization are needed to persuade people to die or kill for their country and fellow countrymen and women (Maleševic, 2013). Nationalism also materializes in common national languages and markets (Gellner, 1983), or in shared institutions, such as national education, national health care, and even democracy (Harari, 2019). National projects that embrace democracy function as branches of a tree that spread far and wide through the national territory, much further than in polities such as tribes or city-states. They provide a greater number of people with, for example, political representation, the right to vote, and other fundamental rights such as the "right to a cure", the right to live in a safe environment, etc. (OHCHR, 2021). Given that (1) nationalism is a force that supports the nation, and (2) climate change is a threat for all nations, it would be remarkable not to find exemplary nation-states that function as forces strongly committed to stopping or mitigating the effects of this threat.

By "exemplary nation-states" (ENS), we mean those communities that have made forms of sustainable living possible both at a small, community scale (Levene and Conversi, 2014; Conversi, 2021a) as well as at the regional or national level (Posocco and Watson, 2022). The notion of ENS is thus a variety of the previously developed notion of "exemplary ethical communities" (EEC) (Conversi, 2021a). These forms include eco-villages, transition towns, self-sustained communities, renewed spiritual traditions, and individual lifestyle changes that are conceived to exit the market economy, including forms of "food sovereignty" (Conversi, 2016) but also official institutions such as governments committed to and successful in decreasing GHG emissions, incentivising the use of green and renewable energy, promoting advanced forms of waste recycling, and supporting the protection of natural habitats—animal as well as human life. It is true that probably no single remedy can be found to tackle climate change and that a great variety of factors will most likely be needed, within each nation-state and certainly at the international level. Yet, the study of those exemplary communities that have embarked on the journey of environmental protection to fight climate change is needed to highlight the necessary factors in order to mitigate the latter's effects. These communities represent perhaps the only viable options, and certainly sources of inspiration, for 21st century nation-states driven by national ideology.

POSITIVE DEVELOPMENTS: THE BONDING BETWEEN NATIONALISM AND ENVIRONMENTALISM

The choice of focusing on Germany, Denmark, Sweden, Norway, and Switzerland comes from the evidence that: (1) these countries have often been ranked at the highest levels in two of the most important environmental indexes—the Environmental Performance Index (EPI),[4] and the Climate Change Performance Index (CCPI)[5]—and (2) these countries did not renounce nationalism, which not only remains their political ideology but

[4]The *Environmental Performance Index* was developed by Yale University (Yale Center for Environmental Law and Policy) and Columbia University (Center for International Earth Science Information Network) in collaboration with the World Economic Forum and the Joint Research Center of the European Commission. It is a method of quantifying and numerically marking the environmental performance of a state's policies.

[5]An index that evaluates and compares the climate protection performance of 63 countries and the European Union, which together are responsible for more than 90% of global greenhouse gas emissions. See https://germanwatch.org/de/19552#CCPI2021 for details (accessed December 25, 2021).

bonds with environmentalism to create distinctive forms of GN, in order to achieve their goals. That said, the goal here is to identify those factors that make the bonding between nationalism and environmentalism possible. This article identifies four of these: (1) a tradition of environmentalist ideals; (2) grassroot environmental activism; (3) environmental policy sustained in the long run; and (4) sustainable practices at various levels of society.

Scandinavia: A Tradition of Environmental Ideals and Environmental Activism

The 1960s occupy a special place in Scandinavian historiography (Kaijser and Heidenblad, 2018; Heidenblad, 2021). What is commonly known as the "environmental turn", the intense environmental debates that started in 1968 and reached a peak in the 1970s worldwide, occurred earlier in Scandinavia, in the mid-1960s. As previously mentioned, environmental problems began to be felt widely in the 1960s. In 1970, these culminated in the establishment of *Earth Day*, which has been held annually ever since, on April 22; an Earth Day Network was established, later coordinated by EarthDay.org with the participation of one billion people around the world (Freeman, 2002; Rome, 2010).

The Scandinavian "environmental turn" was due to the work of (numerous) environmental organizations such as *Fältbiologerna* (Nature and Youth Sweden),[6] distinguished by being committed not only to instilling love for nature but to spreading environmental ideals such as being influential and radical when it comes to protection of the environment and engaging in environmental debates and actions where necessary. *Fältbiologerna's* slogan "keep your boots muddy" didn't mean only to materially "live" nature. The metaphor of "dirt" also meant to fight against environmental problems such as dirty water, air pollution, waste management, and all the dirt linked to the growing number of human activities that exploit the planet's natural resources (Kaijser and Heidenblad, 2018). The slogan materialized in organized demonstrations against projects that risked endangering the environment such as the nationwide demonstration in 1969, held at Sergels Square (Stockholm), against the expansion of hydroelectric power in northern Sweden.

Heidenblad (2021) points to numerous similar demonstrations linked to the relationship with nature that is deeply rooted in Scandinavian culture. The specific Norwegian word *friluftsliv* translated as 'free life air', condenses this. *Friluftsliv* means "a philosophical lifestyle based on experiences of the freedom in nature and the spiritual connectedness with the landscape" (Gelter, 2000, p. 78). As famously highlighted by Eric Fromm, the difference here from the mode of possession in consumer society that commodifies nature is significant (Fromm, 1976). *Friluftsliv* posits that being in/with nature is not something that can be achieved by means of action, such as conquering a mountain or camping, but identifying with it. The central idea is that human life and natural life are the same, and endangering one results in endangering the other. The concept of *friluftsliv* is common in Scandinavian countries, the fruit of a long tradition of education that was initially conducted through official institutions such as *Fältbiologerna* or *Friluftsfrämjandet* (Swedish Outdoor Organization), the Danish Outdoor Council (*Friluftsråde*), or the Norwegian Trekking Association (*Den norske turistforening*). As Gelter (2000) posits, the benefits in terms of environmental awareness include the fact that Scandinavian countries developed a strong *environmental* identity that bonded with the national one. Identifying with the nation, thus having an image of communion with fellow countrymen and women even if one will never know most of them (Anderson, 2006), is extended to the national environment (mountains, rivers, lakes, forests, etc.). The same fraternity that makes it possible "for so many millions of people not so much to kill, as willingly to die for such limited imaginings" (Anderson, 2006, p. 6–7), is extended to the national environment. This is particularly true for Norway, which gained national autonomy in 1905 and made *friluftsliv* a matter of national pride, an element that characterizes Norwegian identity (Gelter, 2000).

The bonding between nationalism and environmentalism is thus a cultural trope in Scandinavia, and lies at the roots of people's mobilization against forces that threaten the national environment. That said, it doesn't mean that the lifestyle of many Scandinavian, German, and Swiss people isn't drenched in high-energy activities that contrast with the very basis of a sustainable society. Indeed, in order to enjoy nature, Norwegian elites demand luxury cabins for private use, buy more cars to drive there, use expensive floor heating, etc. As with many other countries, Scandinavians, too, are subject to consumer capitalism. For their outdoor activities they own not just one pair of skis (as they did perhaps in the 1970s), but six or eight pairs, for different purposes.

Germany

Germany's environmental history has much in common with Scandinavian countries. As Uekötter (2014) puts it, the network of environmental associations in the Reich in the 19th century were vast and complex. Although the birth of these associations occurred mainly within the framework of the German states, which have historically been keen to maintain internal autonomy, love for the environment followed nationalist dynamics. Indeed, when looking at the names of these associations, one cannot but acknowledge the way environmentalism expressed itself through nationalism, whether in its local, regional, or national specificities—Homeland Protection (*Heimatschutz)*, the Bavarian League for Nature Protection (*Bund Naturschutz in Bayern*), and the League of Animal Protection Associations of the German Reich (*Verband der Thierschutz-Verine des Deutschen Reiches*). While similar trends are visible in other countries, the specifics in Germany at the crossroads between the 19th and 20th centuries indicates that the alliance between nature protection organizations and the German state was very strong (Uekötter, 2014, p. 31). In the early 20th century, "The newly created civic organizations had barely begun working when the state administrations were already eagerly searching for ways to pull the new issue into the orbit of state policies" (Uekötter, 2014, p. 32). Whatever logic pushed the state to "domesticate" ecological/environmentalist movements, the

[6] *Fältbiologerna* has been active since the 1940s.

tradition of environmental policy in Germany is one of the oldest in Europe, and beyond.

While Norwegians developed the concept of *friluftsliv* in the 1970s, Germans had the Life Reform (*Lebensreform*) movement, which took various forms such as hiking groups, naturopathy, nudists, vegetarianism, and others. One of the major elements of Life Reform was the refusal of society born out of the industrial revolution, and the development of a counter-revolution that aimed to "return to nature". In Germany, this also took mythical forms expressed through literature, art, music, and opera (Schumann, Brahms, Mendelssohn, Wagner, and Mahler are all important representatives of German romanticism, which highlighted and took inspiration from nature). Closeness to nature became one of the elements characterizing the German bourgeoisie. It was also a modus vivendi that other sectors of society, including the lower classes, were pushed to imitate (according to their available resources). Social institutions such as national schools, museums, and outdoor organizations played a role in making this happen, instilling love for the natural wonders of their nation. In Germany, love of nature is thus one of the founding elements of national identity and formed the very pillars of German environmentalism in the late 20th and early 21st centuries.

This love of nature took both peaceful and violent forms. In fact, there is a substantial difference with the *Völkisch* (ethno-nationalist) elements that in the past appropriated this call for land: "reclaiming" the land, seemingly so much at odds with a supposed ecological defense of the territory, was a recurrent practice among expanding European nationalisms. This was clearly shown in the Prussian/German conquest of the "wilderness" of the marshes, as the German state was reframed as the Lord and Master of Nature (Blackbourn, 2006). The 19th century was also a colonizing age of dam-building, social engineering, and a technocratic cult for mechanization. In other words, the nature-loving trend within German nationalism before WW2 was accompanied by a frenzy for the electrification, commodification, and nationalization of the national space (Conversi, 2012). The Janus-faced essence of nationalism allows it to be used for apparently contradictory, even incompatible, purposes: while claiming the beauty of national landscapes and the virtues of peasant life, nationalism was also a tool of bourgeois expansion (HadŽidedi, 2022). Nationalism aimed at the transformation of "peasants into Frenchmen" (Weber, 1976), it institutionalized a perfect congruence between state, people, culture, and territory (Mandelbaum, 2020)—a kind of mystical union converging around the veneration of the patriotic totem.

This doesn't alter the fact that it is difficult to understand environmental activism in West Germany in the second half of the 20th century without considering environmentalism as an ideology shared by Germans prior to that time, which contributed to their will to mobilize for the protection of nature.[7] There isn't space here to list the numerous demonstrations in support of the environment that made Germany what Uekötter (2014) calls one of the "greenest" nations. It will suffice to remember some of the events of the 1970s and 1980s: two decades during which the German environmental movement steadily grew. These included the massive protests against the construction of the nuclear plant at Wyhl, on the river Rhine, in 1973 and 1983. Resistance took the form of lawsuits, squatting on the building site, the establishment of a radio broadcasting channel, and many demonstrations (Kunze and Philipp, 2013). In 1983, 30,000 people demonstrated against the nuclear power plant and kept challenging its construction even when official permission had already been granted (Patterson, 1986). In 1975, the *Bund für Umwelt und Naturschutz Deutschland* (German Federation for the Environment and Nature Conservation) was born and backed most of these and many other environmental grassroots' actions. Balistier (1996) collected data supporting evidence of 9,200 protest actions in 1983 alone, when the environmental movement peaked in Germany. It was irrelevant that, as Wagner (1994) and Dryzek et al. (2002) put it, the environmental movement represented in politics by *Die Grünen* (the Green Party, which took shape in the early 1980s) was excluded by Helmut Kohl's government. The massive number of protests and media coverage projected environmentalism outside the local bubbles in which it was born to become a nationally debated phenomenon. Eventually, *Die Grünen* joined the federal government for the first time in 1998, gaining 47 seats.

These events should not be considered in isolation but as parts of a greater narrative of environmentalism that bore many fruits in Germany. These include the first 'Zone 30' (30 km/h zone, *Tempo-30-Zone* in German) in Buxtehude, a small town near Hamburg, in 1983 (Colville-Andersen, 2018, p. 58). It should be noted that 1983 was a year of massive green protests in Germany. Even if the Green Party was in government they already exercised enormous pressure at local and regional levels. In time, the example set by Buxtehude was followed by many bigger cities, such as Munich, which today can count 2,300 km of urban roads in Zone 30, while the rest have a limit of 50 km/h. Freiburg and Hamburg have been among the first to extend the 30 km/h limit to large urban areas. Germany was also one of the first countries, if not the first, to create the "Blue Angel", a label awarded to environmentally friendly products in Germany. Much of these achievements have strengthened the pride of Germans in being German: a nation that is moving toward sustainability, although much more needs to be done to fully achieve it (Posocco and Watson, 2022).

Switzerland

Switzerland's trajectory in terms of environmentalism is similar to Germany's and to the Scandinavian countries discussed here. Fast industrialization in the 19th century also brought environmental problems in Switzerland that sparked nostalgic

[7]A recent survey by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) reports that 76% of Germans believe their country rightly committed itself to the preservation of biodiversity, around 90% stated that biodiversity in nature promotes their well-being and quality of life, and 83% inform themselves (or is willing to do so) about current developments in the field of biodiversity and draws the attention of their friends and acquaintances to biodiversity conservation.

ideas of the Swiss countryside characterized by "special patriotic overtones" (McNeill, 2000: 329). For example, when railroads were built everywhere in Europe (and beyond) in the 19th century as the distinctive feature of modernisation, the Swiss expressed their dissent, especially when railroads came closer to the Matterhorn, the mountain that is also a symbol of Switzerland and Swiss identity (Walter, 1989).

Influenced by Germany, Switzerland also had its *Lebensreform*, which provided ideological and practical tools to approach the negative consequences of industrialization—in particular, by proposing a return to nature, rejecting alcoholic beverages and tobacco, and preaching a more natural way of life. The physical vicinity of Germany and the fact that part of the Swiss population speaks a dialect of German was probably the basis of the proliferation of *Lebensreform* in Switzerland. The influence was reciprocal: German advocates of this new lifestyle influenced the Swiss and vice versa. For example, the Swiss painter Gusto Graeser was one of the founders of the community of *Monte Verità* (Ascona, Switzerland), which attracted many German artists and writers whose work spread the idea that nature is not external to human beings but integral to them (Herman Hesse and Gerhart Hauptmann were among these artists and writers). According to this view, what is true for Germany is also true for Switzerland. As Williams (2007) put it, it would be wrong not to see in these movements the roots of a larger interest in the protection of nature that flourished in the 1970s and 1980s. They emphasized and promoted the idea of the goodness of nature and the harm caused to it by human activities. These ideas became important parts of these communities' collective memory (Halbwachs, 1950) and laid the foundation for environmental activism and good practice. Perhaps it is no coincidence that Marco Salvi and Juerg Syz (Salvi and Syz, 2011) found a strong correlation between green buildings and linguistic affiliation and territoriality in Switzerland. See **Figure 1** below. Green building density for German-speaking municipalities is 76.2% higher than for comparable French, Italian, or Romansh speaking municipalities. This data, supported by strong quantitative evidence, shows that culture might exert a major influence on environmental choices. The fact that the number of green buildings increases in alpine resorts, thus in places that were the stronghold of the *Lebensreform* movement and symbols of a deep connection between nature and Swiss national identity, is further important evidence strengthening this hypothesis.[8]

Environmental Policy and Sustainable Practices

"When an idea becomes successful, it easily becomes even more successful: it gets entrenched in social and political systems, which assists in its further spread. It then prevails even beyond the times and places where it is advantageous to its followers" (McNeill, 2000, p. 326). McNeill derives this concept from historians of technology, who refer to analogous situations as 'technological lock-in': the adoption of certain practices in technology (such as the narrow-gauge railway track adopted in the 19th century) that become standardized. The same applies to ideas. McNeill described as "ideological lock-in" the process characterized by ideas that become orthodoxies: dominant ideas that permeate various levels of society, including social and political institutions. Ideological lock-in can be a positive or a negative development. It is negative when ideas are so entrenched that they are hard to eradicate even when better options are available. It is positive when better ideas, such as that nation-states should take responsibility for the activities that harm living and non-living beings (within or outside their borders), take root and become orthodoxies. Environmentalism is a package of such ideas.

In the nation-states under investigation here, environmental ideas wormed their way through the political institutions and bonded with nationalism, suggesting to the nation's representatives that it is in the interest of the nation (and thus also in their interest) to be concerned about their natural resources, to protect them, to reduce human impact on the national environment, etc. By the 1980s, large sectors of the German, Swedish, Norwegian, Danish, and Swiss populations, as well as their political forces, and even polluters, started to espouse these ideas. One of the case studies providing evidence of this comes from Vauban, a district of the city of Freiburg (Germany). It is possibly the most studied model of environmental sustainability and applied to many countries and regions (Buehler and Pucher, 2011; Fraker, 2013; Daseking, 2015). The case of Vauban, which was at the core of recent investigations (Posocco and Watson, 2022), shows what exceptionally positive changes might occur when national institutions fully embrace environmentalism. Vauban has historically been a contested territory between Germany and France. Under the Nazis, it became a military base, and occupied by the French after WW2 (until 1992). Vauban is the expression and symbol of nationalism, a place where France and Germany flexed their military muscles. The former took the territory from the latter, and vice versa, twice. Under the Nazis, Vauban followed Hitler's *Recht des Stärkeren* ("the right of the stronger"), as Brockers (2016) puts it, that aimed to justify Germany's attempt at supremacy.

After 1992, when the French military left, "Ownership of the district reverted to the German federal government and the City of Freiburg purchased it for some EUR 20 million" (Coates, 2013, p. 2). A few years later, a group of students, architects, and other ecologically minded citizens calling themselves "Forum Vauban" started to meet informally in a bid to save the district from the state of decrepitude in which muscular nationalism had left it. They reinvented Vauban as an ecological island "energy efficient, solar powered and largely car-free urban community. Soon thereafter they began to convert their dreams into reality" (Coates, 2013, p. 2). See **Figure 2** as an example of Vauban's car-free street. Their ideas didn't come from nowhere. Indeed, around this area a tradition of environmentalism and environmental activism existed dating back to the late 1960s and especially the 1980s when there were major protests against the nuclear plant at Whyl (see previous section). But the real change was when Freiburg City Council embraced these

[8]Other factors, i.e., income levels, must also be taken into account. As green buildings still cost more, on average, than traditional ones, income levels play an important role. Evidence collected by Salvi and Syz (2011) support this thesis.

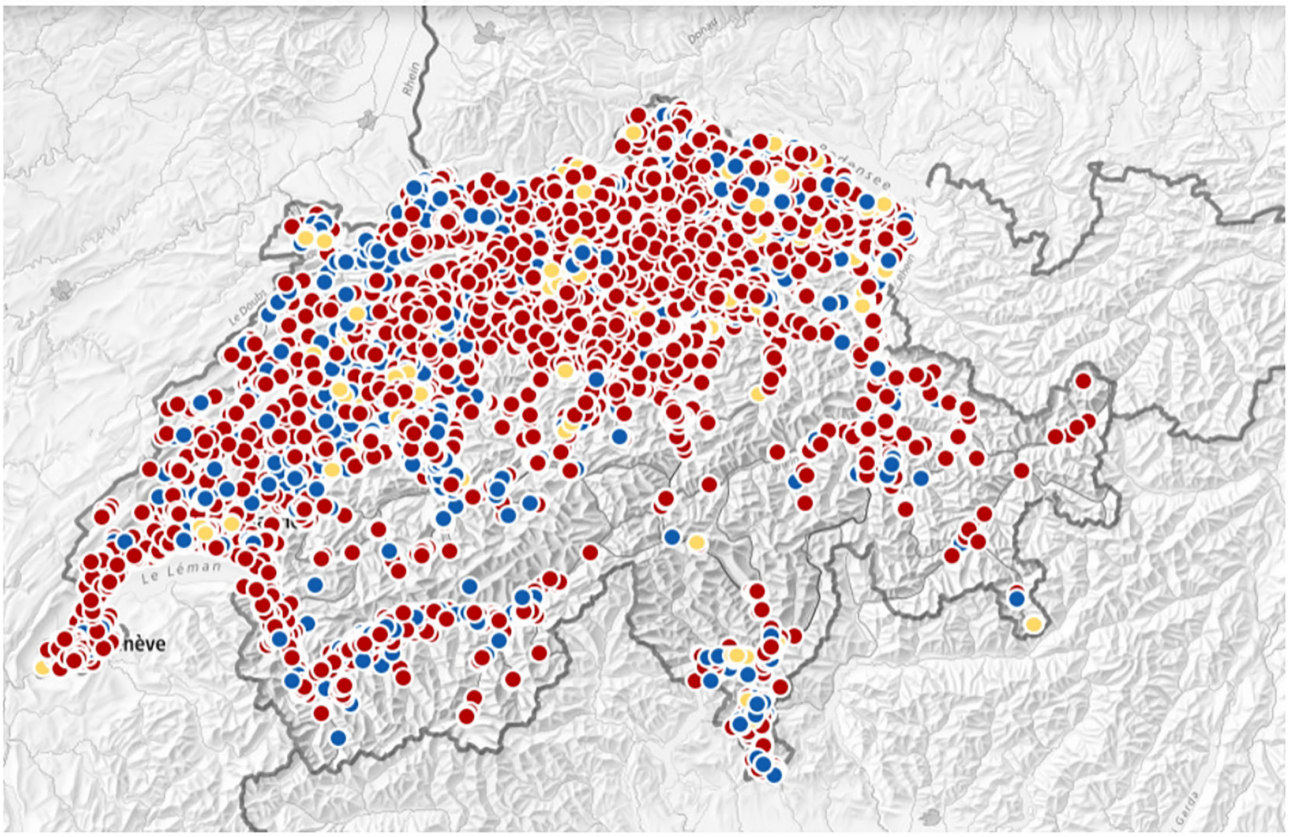

FIGURE 1 | Image n. Spatial distribution of Green Buildings in Switzerland. This is a more updated map than Salvi"s and Syz"s study (2011), providing the number and position of green buildings in Switzerland in 2021. Green buildings remain clustered, mostly located in the northern and northeastern part of the country. The Ticino canton (close to the Italian border) exhibits lower green housing activity. Source: Swiss Office of Energy at https://map.geo.admin.ch/?lang=en&topic=energie&bgLayer=ch.swisstopo.pixelkarte-grau&catalogNodes=2419,2420,2427,2480,2429,2431,2434,2436,2767,2441,3206&layers=ch.bfe.minergiegebaeude (accessed January 2, 2022).

people's ideas. This was the exact moment in history when nationalism, incarnated in state institutions, took off its clothes as a "violent" ideology, and espoused environmentalism. At this point, Vauban was still a district on the margins of German society, rather poor, its buildings occupied by squatters imbued with countercultural ideals and environmental dreams. The city provided these people with a rental contract and launched an urban planning competition that aimed to meet the demands of its citizens. As Posocco and Watson (2022, p. 15) note: "The competition was won by Kohlhoff/Billinger/Luz, a joint working group of architects, engineers and open space planners that also espoused environmentalism".

During the following 30 years, from 1992 to the present, there was a crescendo in environmental projects that spread to neighboring districts, the city of Freiburg, the region of Baden-Württemberg, and beyond. For this to happen, nationalism didn't have to disappear; indeed, it functioned as an important catalyst for environmentalism. Abandoning its violent and extremist forms, which have proved harmful to the German nation (and beyond), nationalism found expression in a more peaceful way as an ideology to protect the national environment. Growing scientific evidence that uncontrolled human activities are at the basis of the climate crisis, possibly the biggest threat that our societies now face, has strengthened the bond between nationalism and environmentalism in Germany. It is not surprising given that one of the elements of nationalism as an ideology is "priority to the nation" (Posocco and Watson, 2022). Nation-states are principally concerned about national matters and less about global issues. And yet, when nation-states where environmentalism is locked in realize that climate change isn't only a threat to some distant island that might disappear due to rising sea levels, but also to them, they act and take (national) pride in doing so.

In Germany, pride in increased national sustainability has taken local, regional, and national forms. National flags are waved and a national language is used in speeches by politicians and scientists that praise national efforts toward sustainability. In Vauban, a regional paper has commented: "The reputation of the "organic and eco-district" is justified [...] It is a reputation that we "*Vaubanler*" [Citizens of Vauban] can be proud of: we lead by example" (Badische, 2014). At the national level, Dirk Messner, President of the Federal Environment Agency, stated "We can be rightly proud of what the new federal states have achieved in terms of environmental protection after 1990. In

FIGURE 2 | Street view of Vauban, Freiburg. Picture credits: https://emmettrussell.co.uk/news/study-trip-to-vauban-freiburg/ (accessed January 5, 2021).

many rivers, which were ecologically dead at that time, life has returned. The air, which was biting in some regions 30 years ago, is now almost everywhere below the applicable limit values" (Bundesregierung, 2021). "We are proud to be one of the first countries in the world to have adopted a national resource efficiency programme" wrote Reinhard Kaiser, former employee of the Federal Ministry for the Environment (Kaiser, 2018). These are just some examples. There are many others, at all levels of society, where taking care of nature is promoted as something "German" that Germans can be proud of. The many awards such as the title of "European Green Capital" or the "United Nations" Environmental Award" and the increasing number of indexes that rank countries according to environmental criteria all help to encourage nation-states" pride in sustainability. Frankfurt, for example, was a finalist in the "European Greenest City" award supported by the EU. Media (and social media) coverage turn these awards into positive advertisement for "eco" nation-states such as Germany. Environmentalism becomes something commonly understood as good and worth pursuing, which in turn meteorically increases the popularity of green practice. This also has implications at the economic level—for example, many studies have started to investigate the positive effects of ecotourism (Fletcher, 2019; Fennell, 2020), others have highlighted corporate environmentalism as an opportunity for firms to improve brand image, reduce costs, make shareholders happier, and even increase productivity (Chrun and Dolšak, 2016). In Germany, the core of these developments lies in a synergy between political, economic, and social forces that either espouse or abide by environmental regulations, and believe that by acting in support of the environment they also act in the nation's interests.

The same is true for Norway, an *actively inclusive* state (Dryzek et al., 2002). As such it doesn"t only accept the demands of environmental activists and turn them into state policy, but anticipates them, securing a "desired pattern of interest articulation" (Dryzek et al., 2002, p. 660). It is also "an organizational society" (Selle et al., 2019, p. 5), which means that the range of organizations that form the third sector (including environmental ones) receive substantial financial support from the state. Financial resources follow governmental priorities and these are binding on those that receive them. Thus Dryzek et al. (2002) are right when they state that environmental groups in Norway are the very arms of the Norwegian state. Governments fund them to help draft environmental policy (Smillie and Filewod, 1993). Moreover, these organizations are also called to monitor the enforcement of these policies, identify environmental problems for legislative review, collect and assess information, and recommend courses of action and follow up. It is not surprising that Norway is called "the country of a thousand committees" (Klausen and Opedal, 2019). Environmental committees, a small but solid Norwegian tradition adding to Norway's welfare state, ensure citizens'

participation in the political life of their country. In the past, they helped draft and enforce a number of notoriously "problematic" policies, including "eco taxes" in 1991 (Dryzek et al., 2002). In fact, when states are resolute in making polluters pay for harming nature, their polluting activities become financially unsustainable. The only countermeasure they can take is to convert to greener activities, adopt better technologies, or shut down. The state (through its governmental arms) seems to be the only power, when it realizes what a serious threat climate change constitutes, that has the tools (judicial and regulatory on top of symbolic power) to force polluters to stop polluting. The problem is that, although taxation is one of the most effective measures to fight climate change (Cullenward and Victor, 2020), for many reasons governments are often hesitant to use eco taxes. What's interesting about Norway is that such taxes are notoriously very high, which is also the reason why the Norwegian fiscal regime has by far the strongest CO_2 abatement effect among all Scandinavian countries (Østli et al., 2021). While it is uncertain whether Norway will triple its national tax on CO_2 emissions by 2030 (Reuters, 2021), it is worth mentioning here that certain propositions aren't even thinkable in other countries. From this perspective, Norway is far ahead.

Eco taxes aside, green parties play an important role in pushing environmental policy. This is particularly true in Germany, where the making of a green state came about through the growing power of the Green Party (Uekötter, 2014). The same is true for Norway, although unlike Germany, Norway's green party has until very recently received little or no attention at all by the Norwegian electorate.[9] Environmental ideas and sustainability are an orthodoxy in Norway, they have locked in and spread, so much so that most parties have "green" policies in their programmes. This is clear when looking at the Norwegian Green Party (*Miljøpartiet Dei Grøne*) that gained 3.8% in the 2021 election, which was saluted as a victory. The same is true for the 6.8% gained in the municipal elections in 2019. The Norwegian case study is fundamental to understand that when environmental ideology is a national tradition, a cultural reality shared at many levels in society, environmental policy is the natural consequence of that society. The protection of the national environment isn't a problem that weighs on the nation but a national necessity, and as such is generally accepted (sometimes with some difficulty) even when it represents a burden on the taxpayers' money.

Although much more needs to be done in both Germany and Norway to build a fully sustainable society (the *Climate Change Performance Index* (CCPI) left the first three positions empty in its ranking, stating that even those, like Norway and Germany, that are doing better than others, should not ease up), most nation-states lie far behind. This is particularly striking

[9]In 2021, the Norwegian Green Party (*Miljøpartiet Dei Grøne*) achieved 3.8% of the votes in the general election, becoming the third largest party in major cities like Oslo and Trondheim. Until 2009, the party received very little attention, scoring an insignificant 0.03% (2009), 0.01% (2005), and 0.02% (2001).

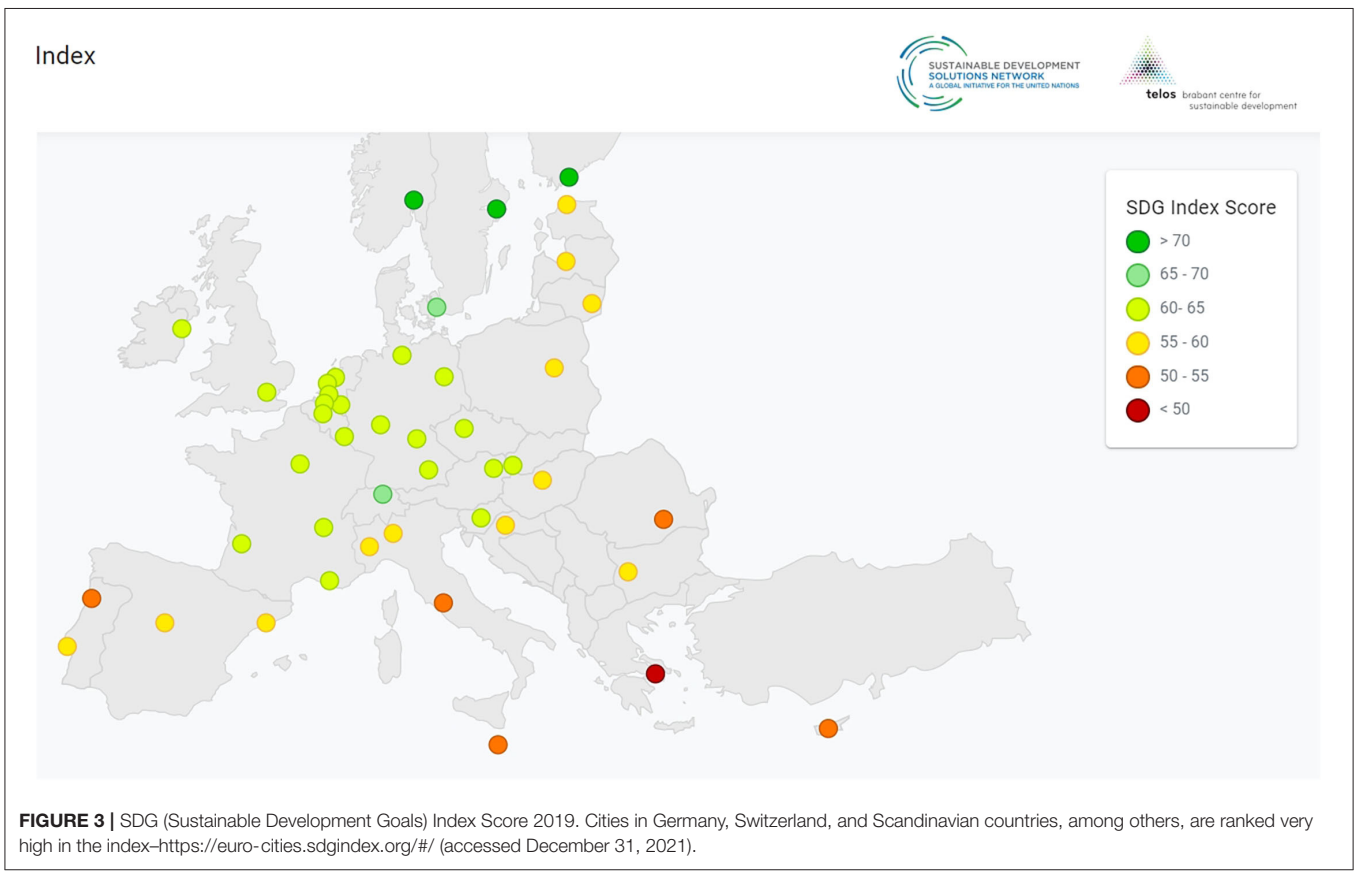

FIGURE 3 | SDG (Sustainable Development Goals) Index Score 2019. Cities in Germany, Switzerland, and Scandinavian countries, among others, are ranked very high in the index–https://euro-cities.sdgindex.org/#/ (accessed December 31, 2021).

when looking at the examples of Vauban (Freiburg), Munich, or Oslo. All three have developed a car-free city center and aim to achieve a 95% reduction in GHG emissions by 2030, a target that most cities hope to achieve by 2050. Zürich, in Switzerland, doesn't lag behind. In 2016, the Swiss city occupied first place in the Arcadis Sustainable Cities Index, which ranks 100 major cities on 32 indicators across three aspects of sustainability: people, planet, and profit. The 2020 CCPI ranking put it 15th, marking the fact that it remains among the overall high-performing countries. Like other urban centers in this study, see **Figure 3** above, factors that determined Zürich's high positions in these rankings are energy, pollution, and emissions. Regarding energy, the number of green buildings is higher in Switzerland than in comparable countries (Salvi and Syz, 2011). According to Salvi and Syz (2011), the public sector played a pivotal role in supporting the market for green buildings. Since the late 1990s, Swiss governments provided many direct incentives including subsidies, grants, favorable loans, tax credits, and rebates that directly supported these buildings. There are numerous case studies in Switzerland that prove how pivotal the role of politics can be (and is) in creating the conditions for successfully developing an environmentally friendly society that also contributes to tackling climate change.

Also in Zürich, the Sihlcity megaproject should be highlighted (Theurillat and Crevoisier, 2013), the first big "urban entertainment center" (UEC) in Switzerland (Theurillat and Crevoisier, 2013: 11). See **Figure 4** below. While there isn't space here to elaborate (we recommend reading Theurillat and Crevoisser's case study), it will suffice to say that the way this urban entertainment center was built (following the city council's guidelines that aim to drastically reduce traffic, encourage people to use collective passenger transport, and reduce pollution), shows that financial actors do take sustainability into account when political actors force them to do so. The goal of corporations, magnates of industries, etc. is to capitalize on their projects, to realize net profit. When political administrations that espouse environmentalism use their (indeed many) available tools to undermine the possibility of profit unless projects comply with environmental guidelines, fruitful negotiations, as in the case study cited above, lead to a compromise. The traffic model that developed in Zürich following the Sihlcity project became embedded, reducing car traffic by one-half and thus pollution. Many other projects in Zürich, and in Switzerland more widely, have followed this model. One of them is MFO-Park in Zürich, a public park once home to the extensive works of Maschinenfabrik Oerlikon (MFO). See **Figure 5** below.

On the subject of urban centers, pollution, and traffic, Oslo is an excellent case study of an exemplary sustainable community. Research has shown that the main contributor to nitrogen dioxide (NO_2)[10] concentration levels in Oslo was diesel exhaust (Santos et al., 2020). Since 2004, the political administrations adopted some countermeasures to lower these levels, but the results were unsatisfactory. In 2015, after Norway was summoned by the ESA (the European Free Trade Association (EFTA) Surveillance Authority) for breaches of the AQD (Air Quality Directive 2008/50/EC, 2008)[11] and found guilty by EFTA, attention to NO_2 levels grew considerably. The political authorities (both local and national) enacted a number of environmental policies to reduce NO_2 levels and comply with AQD, including: (1) increasing tolls that provide access to the inner parts of the city; (2) establishing low emission zones (LEZs); (3) allowing temporary free public transport; (4) allowing odd–even days driving (private cars can only circulate on either odd or even days, based on the last digit of their license plate numbers); (5) defining priority lanes for low-emission vehicles; and (6) imposing higher parking fees. The changes that this policy produced cannot, and should not, be underestimated. In only a few years (2015–2022), Oslo has become one of the cities with the highest air quality in Europe—and beyond. Dropping NO_2 levels has also had positive repercussions on the number of zero-emission vehicles. For example, around 59% of new cars sold in Oslo in 2018 were electric vehicles—a fact that is closely linked to high tolls for entering the city center and parking, that owners of electric cars do not pay (they pass and park for free), coupled with state incentives to buy electric cars.[12]

Santos et al.'s study (Santos et al., 2020) concludes that the most effective measures in Oslo were, in fact, the creation of low-emission zones and parking fees (a measure also taken in other countries such as Amsterdam in the Netherlands). But for this to happen, a synergy between national and local administration was needed. It should be noted that some tensions exist between local and national governments in Norway as well as in most of the other exemplary green nation-states investigated in this study. This is particularly notably when considering that, in stark contrast to the progressive approach of cities such as Oslo, the Norwegian government insists not only on continuing to drill for oil and gas, but has also vowed to explore new oilfields. This does not mean that the national government does not encourage sustainability by supporting municipalities in their efforts. Indeed, these should not be seen as two different entities but as two parts of the same system: the nation-state system. For example, in 2017 the Norwegian Government changed traffic legislation to allow environmentally differentiated toll fees. In this system, vehicles that pollute the most pay more (according to fuel type, Euro standard, type of car, etc.). More attention by the government was complemented by a progressive political coalition in Oslo that understood the importance of a significant transformation of the city with respect to sustainability. Increased attention and focussed policy resulted in Oslo being ranked in the top five most sustainable cities in 2019, and in the same year it was named European Green Capital. Like other awards, European

[10]Elevated levels of NO2 are generally known to damage the human respiratory tract and increase a person's vulnerability to, as well as the severity of, respiratory infections and asthma.

[11]Directive 2008/50/EC of the European Parliament and of the Council on Ambient Air Quality and Cleaner Air for Europe (2008) O.J. L 152/1. Quoted in Santos et al. (2020).

[12]Oslo has the highest number of electric vehicles per capita in the world, according to the municipal government. See https://www.regjeringen.no/en/topics/transport-and-communications/veg/faktaartikler-vei-og-ts/norway-is-electric/id2677481/ (accessed January 9, 2022).

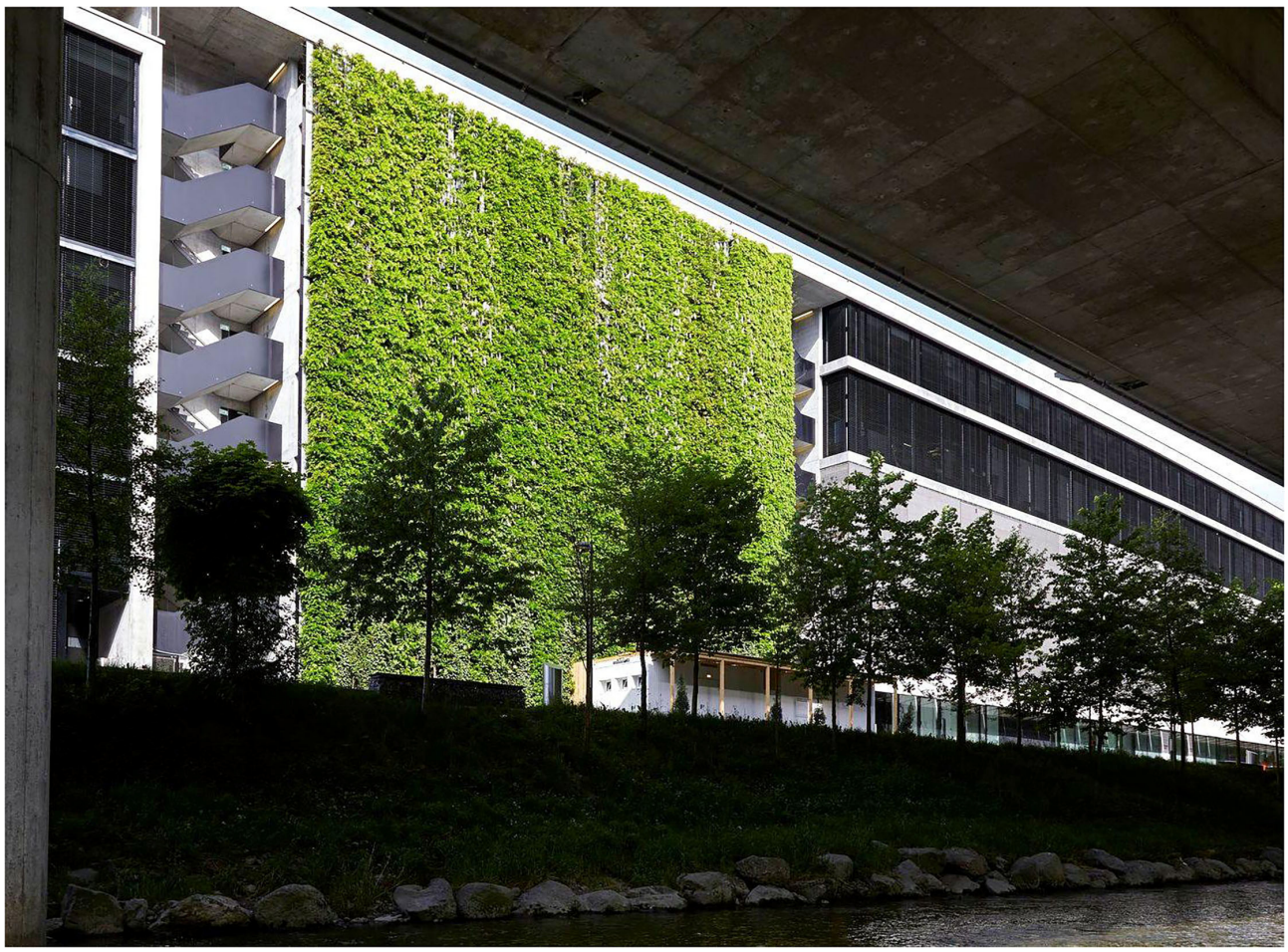

FIGURE 4 | Sihlcity is a shopping mall in Zurich in the Wiedikon district. Source: https://www.greenroofs.com/projects/sihlcity-shopping-centre-living-facade/ (accessed January 9, 2022).

Green Capital is meant to put the city on a pedestal, to represent it as a role model capable of inspiring other cities to promote environmental practices. This inevitably increases people's pride, evidenced by the highest grades of satisfaction for quality of life registered in Oslo's surveys through the years. [13]

CONCLUSIONS

The environmental emergency and life crisis faced by humankind requires a radical and immediate coordination effort at the global level. In other words, we have to swiftly move from multilateral action to some yet-to-be-born form of simultaneity and synchronicity never previously encountered (Conversi, 2020a,b, 2021b, 2022). However, the world is still divided into nation-states and these provide the building blocks for all international organizations and agreements. Moreover, nearly all states in the world rest on the modern doctrine of nationalism. So, we face a painful contradiction: we want to move fast into a better world able to tackle the ongoing crises, but this world doesn't move quickly enough, largely because it is divided by petty interests dispersed along national gridlocks. It would thus be tempting to dismiss nationalism simply as a fastidious nuisance or an obstacle—which, to a certain extent, it is. This article has attempted to show that there are, however, powerful, inspiring examples of increased sustainability, even among existing nation-states. We have found and identified cases in which a new form of "national pride" has ostensibly emerged as a response to the global crises—yet it is still formulated within the parameters of existing nation-states. This is no longer the sort of pride spurred by interstate competition as has occurred over the last few 100 years. It is a pride based on achievements that can be shared across borders, even while the first beneficiaries are those living within the national boundaries. These achievements instill pride, delight and pleasure about our country's national identity because they move the country ahead of others in a way that

[13] Surveys on 'Quality of life in European cities' are available at https://ec.europa.eu/regional_policy/en/information/maps/quality_of_life/ (accessed 9 January 2022).

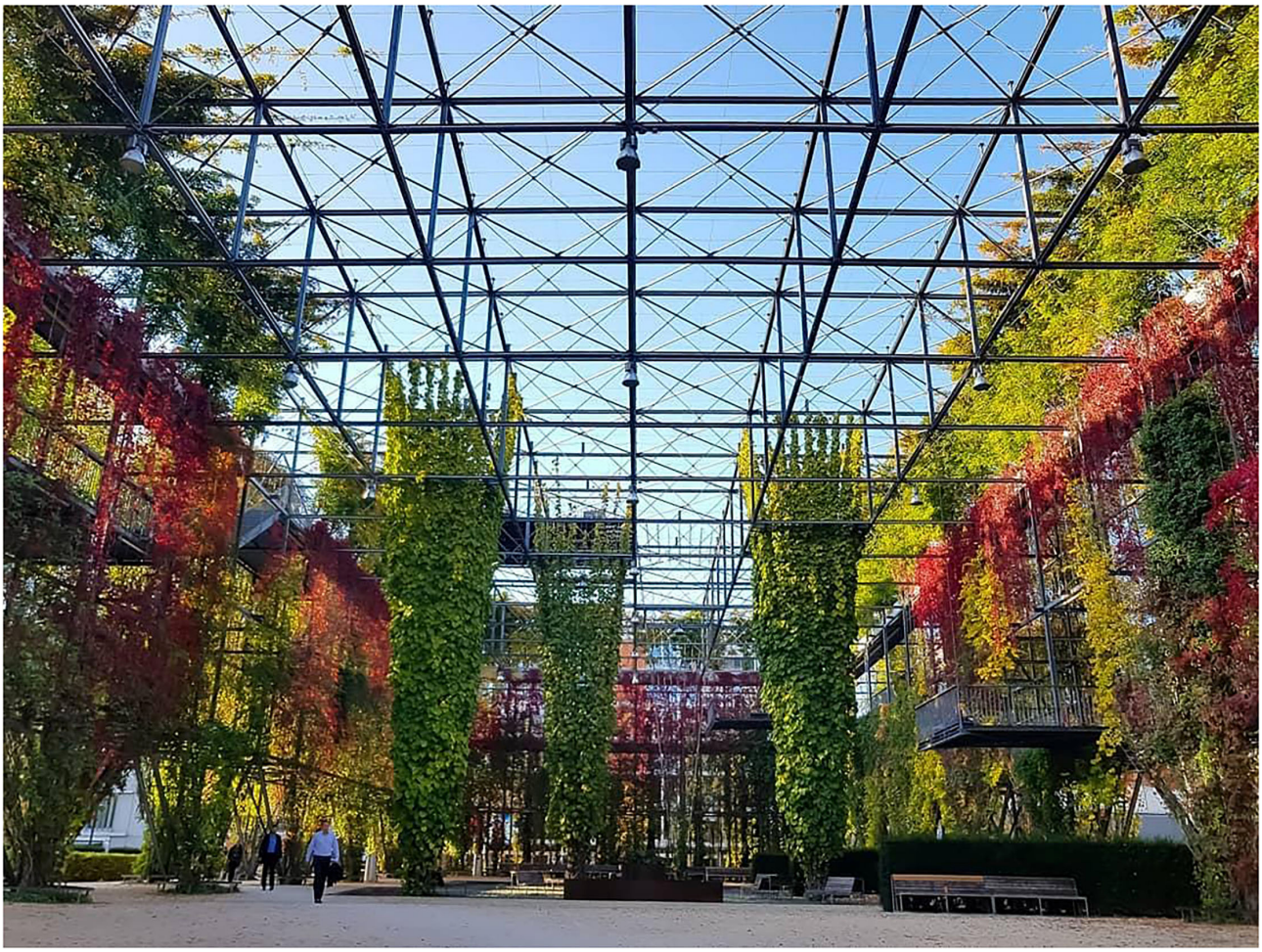

FIGURE 5 | MFO-Park in Zürich–a public park once home to the extensive works of *Maschinenfabrik Oerlikon* (MFO). It has been rebuilt as a green area. Source: https://www.zuerich.com/en/visit/attractions/mfo-park (accessed December 24, 2021).

can benefit others as well. In many respects, the form of green nationalism identified here marks a departure from the kind of interstate competition that has characterized nationalism until now. Competition has not gone, but in some cases it has moved to a new arena: the country with the lowest carbon footprint and the most progressive climate politics "wins" or gains the most prestige. And competition is not the only element; certainly there is much comparison between countries trying to climb the ladder of environmental indexes and/or win awards for the greenest city and/or nation. One might call this phenomenon the new "green cool", characterized by local and national polities combining to lower their carbon footprint while promoting themselves as the most progressive communities in terms of climate politics.

The experience of selected European countries, namely Norway, Denmark, Sweden, Switzerland, and Germany, seems to indicate that there are viable alternatives to the classical obstructionist form of nationalism that has so far prevailed in the international state system during climate negotiations. Such obstructionist attitudes have emerged, and have often prevailed, in successive Conference of the Parties (COPs), the crucial meetings of representatives of countries that have previously agreed to specific targets, such as the UN Climate Change Conference Conventions, the Convention on Biological Diversity, or the Kyoto Protocol—but also the Chemical Weapons Convention or the Treaty on the Non-Proliferation of Nuclear Weapons. The positive examples cited here turn out to be in sharp contrast with the worst environmental offenders, such as the USA, Russia, Brazil or, possibly, China and India. The latter have long been run by economic regimes that place primary importance on some sort of resource nationalism that negatively affects their own populations as well as the rest of the world. They are counterexamples of what does—and does not—need to be done. Our selection is limited to European cases, but it would also be instructive to consider non-European examples, both at the state and at the local level. It is indeed part of our long-term plan to look at the exemplarity of specific regions and nation-states in the developing world as well as smaller communities scattered across the globe—elsewhere identified as "exemplary ethical communities" (Conversi, 2021a).

We finally conclude that these forms of sustainable nationalism, whose characterizing elements involve a tradition of *environmental ideals*, *environmental activism*, *environmental policy, and sustainable practices in the long-run*, can function as inspiring lights to be followed, to various degrees and in different ways, by other countries. The idea of "exemplarity" is intended here as a new form of communitarian collaboration constructed around the pillar of environmentalism to achieve sustainable goals along the lines of "exemplary ethical communities", at local, regional, substate, national, or plurinational levels (Conversi, 2021a). Thus we hope to shape an emerging new field of research that combines sustainability, community-building, and nationalism in a way that can help develop broader participative scenarios during the current green transition.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author/s.

AUTHOR CONTRIBUTIONS

DC and LP have made a substantial contribution to the field of nationalism studies and climate change, particularly focusing on the relationship between the two, and have expanded and applied to new cases the novel concept of green nationalism in the face of approaching cataclysms. Both authors contributed to the article and approved the submitted version.

REFERENCES

Anderson, B. (2006). *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. London: Verso.

Anselm, J., Haikola, S., and Wallsten, B. (2018). Politicizing environmental governance – A case study of heterogeneous alliances and juridical struggles around the Ojnare Forest, Sweden. *Geoforum* 91, 206–215. doi: 10.1016/j.geoforum.2018.03.003

Badische, Z. (2014). Alles Oeko, oder was? Available online at: https://www.badische-zeitung.de/alles-oeko-oder-was-86895970.html (accessed June 21, 2021).

Baird, R. (2008). *The Impact of Climate Change on Minorities and Indigenous Peoples*. London: Minority Rights Group International.

Balistier, T. (1996). *Straßenprotest: Formen oppositioneller Politik in der Bundesrepublik Deutschland zwischen 1979 und 1989*. Münster: Westfälischer Dampfboot.

Beck, U. (2004). Cosmopolitical realism: On the distinction between cosmopolitanism in philosophy and the social sciences. *Glob. Netw.* 4, 131–156. doi: 10.1111/j.1471-0374.2004.00084.x

Beck, U. (2011). Cosmopolitanism as imagined communities of global risk. *Am Behav Sci.* 55, 1346–1361. doi: 10.1177/0002764211409739

Beck, U. (2016). *The Metamorphosis of the World. How Climate Change Is Transforming Our Concept of the World.* Oxford: John Wiley & Sons.

Beck, U., and Sznaider, N. (2006). Unpacking cosmopolitanism for the social sciences: A research agenda. *Br. J. Sociol.* 57, 1–23. doi: 10.1111/j.1468-4446.2006.00091.x

Blackbourn, D.å (2006). *The Conquest of Nature: Water, Landscape, and the Making of Modern Germany*. New York: W. W. Norton & Company.

Brockers, W. (2016). *Mönchengladbachs Historische Momente*. Norderstedt: Studien zur Stadtgeschichte.

Brown, A. (2017). The dynamics of frame-bridging: Exploring the nuclear discourse in Scotland. *Scott. Aff.* 26, 2, 194–211. doi: 10.3366/scot.2017.0178

Brubaker, R. (2015). *Grounds for Difference.* Cambridge, MA: Harvard University Press. doi: 10.4159/9780674425293

Buehler, R., and Pucher, J. (2011). Sustainable transport in Freiburg: Lessons from Germany's environmental capital. *Int. J. Sustain. Transp.* 5, 1, 43–70. doi: 10.1080/15568311003650531

Bundesregierung. (2021). Vereint im Schutz von Umwelt und Natur. Available online at: https://www.bundesregierung.de/breg-de/suche/30-jahre-umweltschutz-1789792 (accessed June 21, 2021).

Calhoun, C. (2003). 'Belonging' in the Cosmopolitan Imaginary. *Ethnicities.* 4, 531–568. doi: 10.1177/1468796803003004005

Chomsky, N., and Pollin, R. (2020). *Climate Crisis and the Global Green New Deal: The Political Economy of Saving the Planet.* London: Verso.

Chrun, E., Dolšak, N., et al. (2016). Corporate environmentalism: motivations and mechanisms. *Annu Rev Environ Resour.* 41, 341–362. doi: 10.1146/annurev-environ-110615-090105

Coates, G. J. (2013). The sustainable urban district of Vauban in Freiburg, Germany. *Int J Des Nat Ecodynamics.* 8, 265–286. doi: 10.2495/DNE-V8-N4-265-286

Colville-Andersen, M. (2018). *Copenhagenize: The Definitive Guide to Global Bicycle Urbanism*. Washington: Island Press. doi: 10.5822/978-1-61091-939-5

Conversi, D. (2010). *Ideology and Nationalism.* London: Routledge.

Conversi, D. (2012). Modernism and nationalism. *J Political Ideol.* 17, 13–34. doi: 10.1080/13569317.2012.644982

Conversi, D. (2014). "Modernity, globalization and nationalism: The age of frenzied boundary-building", in *Nationalism, Ethnicity and Boundaries: Conceptualising and Understanding Identity through Boundary Approaches*, Jackson, J.. Molokotos-Liederman, L. (eds.). Abingdon, UK: Routledge. p. 57–82.

Conversi, D. (2016). Sovereignty in a changing world: from Westphalia to food sovereignty. *Globalizations*. 13, 484–498. doi: 10.1080/14747731.2016.1150570

Conversi, D. (2020a). "The future of nationalism in a transnational world", in *The Wiley Blackwell Companion to Race, Ethnicity, and Nationalism*, Stone, J., Dennis, R., and Rizova, P. (eds). London: Wiley-Blackwell. p. 43–59. doi: 10.1002/9781119430452.ch3

Conversi, D. (2020b). The ultimate challenge: Nationalism and climate change. *Nationalities Papers.* 48, 625–636. doi: 10.1017/nps.2020.18

Conversi, D. (2021a). Exemplary ethical communities. A new concept for a livable Anthropocene. *Sustainability*. 13,5582. doi: 10.3390/su13105582

Conversi, D. (2021b). "Geoethics versus Geopolitics. Shoring up the nation in the Anthropocene cul-de-sac", in Geo-societal Narratives: Contextualising Geosciences, Bohle, M.. Marone, E. (eds). Cham: Springer International. p.135–152. doi: 10.1007/978-3-030-79028-8_10

Conversi, D. (2022). "Ernest Gellner in the Anthropocene. Modernity, nationalism and climate change", in *Ernest Gellner Legacy and Social Theory Today*, ed Petr Skalník (New York, NY: Springer).

Conversi, D., and Ezeizabarrena, X. (2019). "Autonomous communities and environmental law: The Basque case", in *Minority Self-Government in Europe and the Middle East,* Akbulut, O., and Aktoprak, E. B. (eds). Leiden: Brill Nijhoff. p. 106–130. doi: 10.1163/9789004405455_006

Conversi, D., and Friis Hau, M. (2021). Green nationalism. Climate action and environmentalism in left nationalist parties. *Environm. Politi.* 30, 1089–1110. doi: 10.1080/09644016.2021.1907096

Corlett, R. T. (2012). Climate change in the tropics: The end of the world as we know it? *Biol. Conserv.* 151, 22–25. doi: 10.1016/j.biocon.2011.11.027

Crutzen, P. J., and Stoermer, E. F. (2000). The 'Anthropocene', global change. *Newsletter*. 41, 17–18. doi: 10.12987/9780300188479-041

Cullenward, D., and Victor, D. G. (2020). *Making Climate Policy Work*. Cambridge: Polity Press /John Wiley & Sons.

Daseking, W. (2015). Freiburg: Principles of sustainable urbanism. *J. Urban Regen. Renew.* 8, 145–151.

Doherty, T. J., and Clayton, S. (2011). The psychological impacts of global climate change. *Am. Psycholog.* 66, 265. doi: 10.1037/a0023141

Duara, P. (2021). Nationalism and the crises of global modernity (The Ernest Gellner Nationalism Lecture). *Nat. National.* 27, 3, 610–622. doi: 10.1111/nana.12753

Dryzek, J. S., Hunold, C., Schlosberg, D., Downes, D., Hernes, H. K. (2002). Environmental transformation of the state: the USA, Norway, Germany and the UK. *Polit. Stud.* 50, 659–682. doi: 10.1111/1467-9248.00001

Eriksen, T. H. (2009). Living in an overheated world: Otherness as a universal condition. *Acta Historica Universitatis Klaipedensis*. 19, 9–24.

Eriksen, T. H. (2016). *Overheating: An Anthropology of Accelerated Change*. London: Pluto Press. doi: 10.2307/j.ctt1cc2mxj

Eriksen, T. H. (2021a). The loss of diversity in the Anthropocene biological and cultural dimensions. *Front. Polit. Sci*. 3, 104. doi: 10.3389/fpos.2021.743610

Eriksen, T. H. (2021b). Standing still at full speed: Sports in an overheated world. *Front. Sports Act. Living*. 3, 123. doi: 10.3389/fspor.2021.678987

Eriksen, T. H., and Schober, E. (2017). *Knowledge and Power in an Overheated World*. Oslo: Department of Social Anthropology, University of Oslo.

Fennell, D. A. (2020). *Ecotourism*. London: Routledge. doi: 10.4324/9780429346293

Fletcher, R. (2019). Ecotourism after nature: Anthropocene tourism as a new capitalist 'fix'. *J. Sustain. Tour.* 27, 522–535. doi: 10.1080/09669582.2018.1471084

Fraker, H. (2013). *The Hidden Potential of Sustainable Neighborhoods*. Lessons from Low-Carbon Communities. New York: Springer. doi: 10.5822/978-1-61091-409-3

Freeman, A. M. (2002). Environmental policy since Earth Day I: What have we gained? *J Econ Perspect.* 16, 125–146. doi: 10.1257/0895330027148

Fromm, E. (1976). *To Have or to Be?* New York: Harper & Row.

Gellner, E. (1983). *Nations and Nationalism*. Oxford: Basil Blackwell.

Gelter, H. (2000). Friluftsliv: The Scandinavian philosophy of outdoor life. *Can. J. Environ. Educ.* 5, 1, 77–92.

HadŽidedi,ć, Z. (2022). *Nations and Capital: The Missing Link in Global Expansion*. London: Routledge.

Halbwachs, M. (1950). *La mémoire collective.* Paris: Presses Universitaires de France.

Harari, Y. N. (2019). *The Bright Side of Nationalism*. Presidential Lecture Series.

Heidenblad, D. L. (2021). "The emergence of the modern environmental movements, 1959–1972", in *The Environmental Turn in Postwar Sweden,* Heidenblad, D. L. Manchester: Manchester University Press. p. 144–167. doi: 10.7765/9789198557749

Held, D. (2010). *Cosmopolitanism*. Ideals and Realities. Cambridge: Polity Press.

Ingebritsen, C. (2012). Ecological institutionalism: Scandinavia and the greening of global capitalism. *Scand. Stud.* 84, 87–97. doi: 10.1353/scd.2012.0011

Jamieson, D. (2014). *Reason in a Dark Time: Why the Struggle against Climate Change Failed – and What It Means for Our Future*. Oxford: Oxford University Press. doi: 10.1093/acprof:oso/9780199337668.001.0001

Kaijser, A., and Heidenblad, D. L. (2018). Young activists in muddy boots. *Faltbiologerna* and the ecological turn in Sweden, 1959–1974. *Scand. J. Hist.* 43, 301–323. doi: 10.1080/03468755.2017.1380917

Kaiser, R. (2018). 'Germany's resource efficiency agenda: Driving momentum on the national level and beyond', in *Factor X: Challenges, Implementation Strategies and Examples for a Sustainable Use of Natural Resources.* Lehmann, H. (eds). Cham: Springer. p. 213–232. doi: 10.1007/978-3-319-50079-9_13

Klausen, J. E., and Opedal, S. (2019). "The 'ifs' and 'hows' of participation: NGOs and sectoral environmental politics in Norway", in *The Nordic Environments: Comparing Political, Administrative and Policy Aspects.* Joas, M., and Hermanson, A.-S. (eds). London: Routledge. p. 183–208. doi: 10.4324/9780429443084-9

Kunze, I., and Philipp, A. (2013). The Eco-District of Vauban and the co-housing project GENOVA, case study report. *TRANSIT: EU SSH*. 2–1.

Levene, M., and Conversi, D. (2014). Subsistence societies, globalisation, climate change and genocide: Discourses of vulnerability and resilience. *Int. J. Hum. Rights.* 18, 281–297. doi: 10.1080/13642987.2014.914702

Loh, J., and Harmon, D. (2005). A global index of biocultural diversity. *Ecol. Indic.* 5, 231–241. doi: 10.1016/j.ecolind.2005.02.005

Maleševic, S. (2013). Is nationalism intrinsically violent? *Natl. Ethn. Politics.* 19, 12–37. doi: 10.1080/13537113.2013.761894

Malešević, S. (2019). *Grounded Nationalisms: A Sociological Analysis.* Cambridge: Cambridge University Press. doi: 10.1017/9781108589451

Mandelbaum, M. M. (2020). *The Nation/State Fantasy. A Psychoanalytical Genealogy of Nationalism*. London: Palgrave Macmillan. doi: 10.1007/978-3-030-22918-4

McKeon, N. (2015). La Via Campesina: The 'peasants' way' to changing the system, not the climate. *J. World-Syst. Res.* 21, 241–249. doi: 10.5195/jwsr.2015.19

McNeill, J. R. (2000). *Something New under the Sun. An Environmental History of the Twentieth-Century World*. New York: Norton.

McNeill, J. R., and Engelke, P. (2016). *The Great Acceleration: An Environmental History of the Anthropocene since 1945.* Philadelphia, PA: University of Pennsylvania Press/Cambridge, MA: Harvard University Press.

OHCHR. (2021). *OHCHR and Elections*. Available online at: https://www.ohchr.org/EN/Issues/Pages/HRElections.aspx (accessed June 28, 2021).

Østli, V., Fridstrøm, L., Kristensen, N. B., and Lindberg, G. (2021). Comparing the Scandinavian automobile taxation systems and their CO2 mitigation effects. *Int. J. Sustain. Transp.* 1–18. doi: 10.1080/15568318.2021.1949763

Patterson, W. C. (1986). *Nuclear Power*. Harmondsworth, UK: Penguin Books, 3rd ed.

Posocco, L., and Watson, I. (2022). *Green Nationalism: The Bonding between Nationalism and Environmentalism in Vauban, Sustainable District Near The French-German Border*. Nations and Nationalism. doi: 10.1111/nana.12823

Reuters (2021). Norway's plans to raise carbon tax draw oil industry ire. Available online at: https://www.reuters.com/article/us-climate-change-norway-idUSKBN29D1BD (accessed January 3, 2022).

Ridanpää, J. (2021). 'Carbon footprint nationalism': Re-conceptualizing Finnish nationalism and national pride through climate change discourse. *Natl. Identities.* 1–18. doi: 10.1080/14608944.2021.1937974

Rome, A. (2010). The genius of Earth Day. *Environ. Hist.* 15, 194–205. doi: 10.1093/envhis/emq036

Salvi, M., and Syz, J. (2011). What drives 'green housing' construction? Evidence from Switzerland. *J. Financ. Econ. Policy*. 3, 86–102. doi: 10.1108/17576381111116777

Santos, G. S., Sundvor, I., Vogt, M., Grythe, H., Haug, T. W., Høiskar, B. A. et al. (2020). Evaluation of traffic control measures in Oslo region and its effect on current air quality policies in Norway. *Transport Policy.* 99, 251–261. doi: 10.1016/j.tranpol.2020.08.025

Selle, P., Strømsnes, K., Svedberg, L., Ibsen, B., Skov Henriksen, L. (2019). "The Scandinavian organizational landscape: Extensive and different", in *Civic Engagement in Scandinavia. Volunteering, Informal Help and Giving in Denmark, Norway and Sweden*, Skov, L., Strømsnes, H. Svedberg, L. Springer Nature Switzerland. 33–66. doi: 10.1007/978-3-319-98717-0_2

Smillie, I., and Filewod, I. (1993). 'Canada', in *Non-Governmental Organizations: Stakeholders for Development*, Smillie, I., and Helmich, H. Paris: OECD. p. 101–120

Steffen, W., Crutzen, P. J., McNeill, J. R. (2007). The Anthropocene: Are humans now overwhelming the great forces of nature? *AMBIO.* 36, 614–621. doi: 10.1579/0044-7447(2007)36614:TAAHNO2.0.CO;2

Syvitski, J., Waters, C. N., Day, J., Milliman, J. D., Summerhayes, C., Steffen, W. (2020). Extraordinary human energy consumption and resultant geological impacts beginning around 1950 CE initiated the proposed Anthropocene Epoch. *Commun. Earth Environ.* 1, 32. doi: 10.1038/s43247-020-00029-y

Tamir, Y. (2020). *Why Nationalism.* Princeton, NJ: Princeton University Press.

Theurillat, T., and Crevoisier, O. (2013). The sustainability of a financialized urban megaproject: The case of Sihlcity in Zurich. *Int. J. Urban Regen. Renew.* 37, 2052–2073. doi: 10.1111/j.1468-2427.2012.01140.x

Uekötter, F. (2014). *The Greenest Nation?: A New History of German Environmentalism*. Cambridge, MA: MIT Press. doi: 10.7551/mitpress/9780262027328.001.0001

Wagner, P. (1994). "Contesting policies and redefining the state: Energy policy-making and the anti-nuclear movement in West Germany", in *States and Anti-Nuclear Movements*, ed. H. *Ram (Edinburgh: Edinburgh University Press)* 264–295.

Wallace-Wells, D. (2019). *The Uninhabitable Earth: Life After Warming.* New York: Columbia University Press.

Walter, F. (1989). Attitudes towards the environment in Switzerland, 1880–1914. *J. Hist. Geogr.* 15, 287–299. doi: 10.1016/S0305-7488(89)80118-5

Waters, C. N., Zalasiewicz, J., Summerhayes, C., Barnosky, A. D., Poirier, C., Gałuszka, A., et al. (2016). The Anthropocene is functionally

and stratigraphically distinct from the Holocene. Science 351, 6269. doi: 10.1126/science.aad2622

Weber, E. (1976). *Peasants into Frenchmen: The Modernization of Rural France, 1870–1914*. Stanford, CA: Stanford University Press.

WHO. (2020). *WHO Director-General's Opening Remarks at the Media Briefing on COVID-19*. Availalble online at: https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---29-june-2020 (accessed August 21, 2020).

WHO. (2021). *In the COVID-19 Vaccine Race, We Either Win Together or Lose Together*. Available online at: https://www.who.int/news/item/10-02-2021-in-the-covid-19-vaccine-race-we-either-win-together-or-lose-together (accessed May 19, 2021).

Williams, J. A. (2007). *Turning to Nature in Germany: Hiking, Nudism, and Conservation, 1900–1940*. Stanford, CA: Stanford University Press. doi: 10.1515/9781503626881

Zalasiewicz, J., Waters, C. N., Ellis, E. C., Head, M. J., Vidas, D., Steffen, W., et al. (2021). The Anthropocene: Comparing its meaning in geology (chronostratigraphy) with conceptual approaches arising in other disciplines. *Earth's Fut.* 9, e2020EF001896. doi: 10.1029/2020EF001896

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Is Declaring a Climate Emergency Enough to Stop Global Warming? Learning From the COVID-19 Pandemic

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One of the most important challenges our global civilization faces in the coming years is to achieve the Paris Agreement's goals of preventing the planet's temperature from exceeding the pre-industrial values of 2°C and limiting it, at most, to 1.5°C. Awareness of this problem has led to the creation of many national and international organizations in recent decades, with many thematic conferences being held and new policies to reduce greenhouse gas emissions—so far without attaining the necessary success. Among the political measures taken in recent years is the *climate emergency declaration* issued by many government institutions, highlighting the serious and urgent problem of climate change and the imperative need to find a solution. The COVID-19 pandemic, has led to reductions in CO2 emissions due to the substantial decreases in economic activity incurred by several countries imposing non-pharmaceutical interventions. Thus, the current practice of declaring a climate emergency must be fortified by making it a legal tool in order to reduce CO2 emissions and reach the objectives set by the Paris Agreement. Yet, what should this climate emergency declaration look like? In considering these current COVID-19-induced reductions in CO2 emissions, we hereby propose a political plan for stopping emissions to try to achieve the objectives of the Paris Agreement and at least some of the UN's 2030 Sustainable Development Goals. The article also proposes how to define the global climate alarm declaration to serve as an international legal tool for reducing CO2 and transitioning to a world free of these massive emissions. By analyzing the reduction of the emissions in different scenarios based on the COVID-19 pandemic, the article shows that the needed reduction of emissions proposed by the EU in 2030 cannot be reached in any of the scenarios limiting the CO2 emissions.

Keywords: climatic emergency, COVID-19 pandemic, CO2 reduction, climatic alarm, Paris Agreement

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INTRODUCTION

The agendas of governments, the media, and many social groups over recent decades have prioritized reducing greenhouse gases (GHG) in the troposphere in order to curb global warming and its catastrophic consequences for the planet's economy, society, and biodiversity. This has led to the creation of numerous international organizations such as the IPCC, as well as different levels of

government entities and international thematic meetings like the Conferences of the Parties (COP). The main objective is to reduce GHG emissions, mainly CO2, in an attempt to mitigate global warming. However, all these measures have ultimately proven to be insufficient and ineffective, as the global reduction in emissions has instead so far increased year after year (Jackson, 2019).

One of the latest international measures taken by governments and many institutions is to issue a *climate emergency declaration* which recognizes that an administration must act on the causes and impacts of climate change in order to mitigate and reduce its effects. However, what exactly is a climate emergency? What are the implications of declaring one? This paper attempts to answer these questions with a focus on CO2 as one of the major sources of GHG emissions.

THE CLIMATE EMERGENCY DECLARATION

An emergency is a situation of serious risk, catastrophe, or public calamity that requires coordinated intervention by public authorities and citizens in order to protect and relieve people and goods (https://www.oxfordlearnersdictionaries.com/). Therefore, by definition, declaring a climate emergency implies political recognition that climate change poses a serious risk of catastrophe for society, which must be addressed immediately through the coordinated efforts of the public body declaring the emergency and its citizenry in order to protect both people and goods (UN environmental program, https://www.unenvironment.org/explore-topics/climate-change/facts-about-climate-emergency).

Since 2019, many institutions around the world have issued *climate emergency declarations*. For example, the European Parliament approved a resolution declaring a European and global climate and environmental emergency in December 2019 (https://www.europarl.europa.eu/news/en/press-room/20191121IPR67110/the-european-parliament-declares-climate-emergency), which committed the European Commission to align all legislative and budgetary proposals with the objective of limiting global warming to less than 1.5°C, as set out in the Paris Agreement (https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement). The Parliament has called on the European Union to present a climate neutrality strategy as soon as possible and no later than 2050. Through a more broadly defined climate and energy framework, legislation adopted at the end of 2018 committed the EU to reducing GHG emissions from 1990 levels by at least 55% by 2030, (https://ec.europa.eu/climate/police/strategies/2030_en).

In addition, several national, regional and local governments have declared climate emergencies, although in most cases these were mere gestures of political will without enacting any measures or setting budgets for effectively and efficiently combatting CO2 emissions. Yet, the problem of climate change nevertheless remains serious and requires urgent action before we reach the inevitable point of no return (Asayama et al., 2019) in which the irreversible effects of climate change lead to catastrophic economic, social, and biodiversity consequences in the near short term, to say nothing at the moment of the long term (Watts, 2018).

The 2015 Paris Agreement established a global framework to stop climate change from becoming irreversible, namely by maintaining global warming at below 2°C relative to pre-industrial levels and by endeavoring to limit the increase to 1.5°C by 2030 in order to reduce the risks. If we are to initiate drastic and rapid reductions that will achieve the necessary balance between carbon emissions and sequestration over the second half of the 21st century (CO2 neutral planet), global emissions must reach their maximum level as soon as possible. The 2015 Paris decisions constitute the first universal and legally binding resolution on climate change, by which governments formally agreed to transition their current policies toward carbon neutrality by the end of the 21st century, a goal that relies fundamentally on the collaboration of cities, regions, local administrations, civil society, and the private sector.

In December 2018, COP24 agreed on the Katowice Climate Package, which established in detail the common rules, guidelines, and procedures necessary for fulfilling the Paris Agreement and tackling climate change (https://unfccc.int/process-and-meetings/the-paris-agreement/katowice-climate-package). It covers all the key areas for adhering to the agreement: transparency, financing (for those who need it), mitigation, adaptation, and flexibility. Furthermore, it calls for the implementation and reporting of commitments through procedures that are transparent, complete, comparable, and consistent.

Apart from agreements through intergovernmental negotiations, steps have been taken by countries, regions, cities, businesses, and civil society to accelerate cooperation and combat climate change within the framework of the Global Climate Action Agenda.

Recognition of a climate emergency therefore shows that governments are sensitive to the problem of climate change and that it is necessary to act quickly in an organized fashion through a strategy that is global and not sectorial or nominal. This has important policy implications for all governments, from local and regional councils to state ministries. However, if a government simply issues an emergency declaration pro forma and fails to act on it, that very government runs the danger of discrediting itself politically by neglecting to address a serious and urgent problem that it has recognized. This is true even if the administration acts timidly and with little coordination between itself and other organizations.

According to the IPCC report published in August 2021 (https://www.ipcc.ch/sr15/), global warming is accelerating and the effects of climate change come more rapidly and severely over the next 20 years. Furthermore, model projections indicate that the 2040 goal of not exceeding an increase of 1.5°C should be moved up to 2030. Yet, CO2 emissions have not been reduced by official climate emergency declarations and have instead continued to rise (Friedlingstein et al., 2019; Peters et al., 2020), showing once again that these declarations indicate mere intent but not any willingness to act. According to the latest IPCC published in February 2022 (https://www.ipcc.ch/

report/ar6/wg3/) emissions should peak before 2025 and then fall drastically in the following 30 years until almost disappearing in the second mid-century, to avert climate catastrophe.

According to this report, deep and, in most cases, immediate reductions in greenhouse gas emissions in all sectors are necessary.

Given the end results of these climate emergency declarations, several questions arise:

- Is the declaration of climate emergency a sufficient enough political and legal tool for combatting climate change and achieving the IPCC and Paris Agreement objectives?
- Can Europe reduce 55% of emissions by 2030 by declaring climate emergencies?
- Alternatively, should we form a new declaration with actual measures for controlling global warming?

On the other hand, in attempting to reduce the incidence of COVID-19, the months-long drastic worldwide reduction in economic activity from February to May of this year was more effective in reducing CO2 than any of the many measures adopted in recent decades. During this period of almost total economic shutdown in many countries, emissions have been reduced to values not seen since 2006 (Le Quéré et al., 2020). In addition, Goel et al. (2021) studied the change in air quality due to the pandemics lockdown in Punjab region. In light of these unintended experiments, one naturally wonders how a climate emergency declaration should be defined, how long it should last, is it enough to achieve the goal of a 55% of CO2 reduction by 2030, and what its consequences would be?

THE CLIMATE ALARM DECLARATION

The health crisis resulting from COVID-19 has proved that when a population faces a serious and urgent situation affecting its goods and services, many countries have at their disposal powerful instruments to reduce the incidence of the pandemic: total or partial restriction of mobility and the halting of economic activity, among others (Flaxman et al., 2020). These exceptional measures were taken in many cases by declaring a state of emergency or through other similar legal instruments. Before the COVID-19 pandemic, CO2 emissions were growing at approximately 1% per year over the previous decade (Friedlingstein et al., 2019; Peters et al., 2020). However, when the pandemic led to a halt being imposed on economic activity and transportation in the major CO2-emitting countries, these emissions decreased significantly.

Le Quéré et al. (2020) analyzed 69 countries, 50 US states, and 30 Chinese provinces, which all together represent 85% of the world's population and are responsible for 97% of the planet's total emissions. They estimate that, up to the beginning of April 2020, the average daily reduction in CO2 was 17% compared to the average 2019 levels (between −11 and −25%), with peaks of up to −26% in some countries. These authors additionally estimate that the overall reduction for 2020 will see a minimum variation of −4% (range of −2−−7%) and a maximum of −7% (range of −3−−13%), depending on how the economic recovery goes. Based on data for May 2020, they further estimate a global GHG reduction of 2.5 Gt, 0.6 Mt of PM2.5, and around 5.1 Mt of SO2 and NOx. All these environmental improvements occurred as a result of the profound socio-economic crisis, which will undoubtedly be a challenge to recover from while addressing unsustainable global patterns (Lenzen et al., 2020).

The European Union, thought the European Climate Law has set the goal of a 55% reduction in emissions by 2030 in order to limit the effects of climate change (https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-law_en). Regarding the tendency of emissions during the last years, is this target realistic without any policy action to limit CO2 emissions? Additionally, is this target realistic within a political framework limiting the CO2? How many days per year should be limited the emissions of CO2 to achieve the 55% of CO2 reduction by 2030?

Based on the reduction of the emissions calculated by Le Quéré et al. (2020) due to the 40-day nearly absolute shutdown of the economy, three reduction scenarios can be proposed here: low (4% per year), maximum (7% per year), and average (5.5%), which corresponds to a limitation of the common ratio built for computing the reduction per year in CO2. This information can be used to analyze the convenience of partial shutdowns in order to achieve the proposed 55% reductions of CO2.

Let's consider that during the first year there is a 3-days lockdown per month, equivalent to the 40-days per year scenario, limiting the CO2 emissions. Let's take into account a 1% of increasing percentage per year and the reduction percentage of r% per year for the successive values of $r \in \{4, 5.5, 7\}$.

To generate the reduction sequences, we use the following formula: $E_k = E_0 \cdot (1.01)(1 - \frac{k}{3} \cdot \frac{r}{100})$, $k \geq 0$ where k represents the number of shut down days. Next, the reduction percentage with respect the first value E_0 is computed.

Hence, in order to achieve the desired percentage reduction, a sequence of increasing closing days must be defined. Among different options and just as an example, each year from 2023 to 2030, it should be an increase of 1 day per month on 2024 (4.33), 3 days per month the following 2 years (7.33 and 10.33) and 4 days per month the rest of the years until 2030 if we start with the 3.33 days per month of lockdown. **Figure 1** shows the breakdown in days per year versus reduction percentages for each scenario from 2023 until 2030.

Given the minimum emission reduction scenario of 4% per year, the goal cannot be achieved no matter how many days per month of lockdown. The maximum 7% annual reduction scenario would meet roughly a 30% reduction working just 15 days per month and would have a 54.85% reduction in 7 years by closing 26,33 days per month accomplishing the proposed goal, which means absolutely nonsense. The average scenario of a 5.5% annual reduction in planetary CO2 emissions would just reach a 43% by the end of the seventh year.

It is essential to highlight that all these reductions are based on stopping most of the economic activity for several days a month at a planetary scale, increasing each year, particularly in the 69 countries, 50 US states and 30 Chinese provinces mentioned previously (Le Quéré et al., 2020), which empirically demonstrates that it produces a large decrease in CO2 emissions.

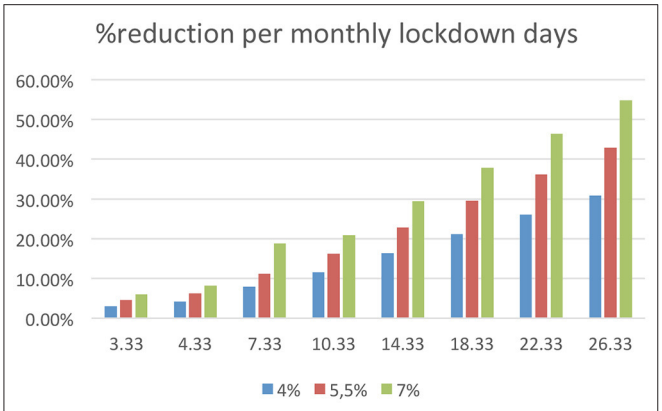

FIGURE 1 | Closing days proposal in order to achieve a given reduction in CO2 emissions, assuming a minimum reduction of 4% per year (blue), average of 5.5% (red), and maximum of 7% (green), based on estimates by Le Quéré et al. (2020).

An important difference exists between the halting of economic activity as a result of COVID-19 and the freeze that we propose. This monthly N-day hiatus does not necessarily imply ceasing all industrial activity or all mobility, nor does it mean confinement of the population, since it is not a response to any health crisis. It only involves interrupting all the activities associated with direct CO2 emissions, except for those considered essential. No stoppage should be imposed on industrial activities that use clean energy without directly emitting CO2, on those fueled by renewable energy, or on industries that apply alternative methodologies for achieving zero emissions. Those exceptions would be excluded primarily because they do not contribute to the urgent and serious challenge of drastically reducing CO2 emissions. This would additionally and most certainly encourage industries to rapidly accelerate their transition to clean energies without any need to declare a state of climate emergency.

What Should a Global Climate Alarm Look Like?

Looking at the measures for restricting movement and economic activity that some countries implemented by declaring a state of emergency to confront the COVID-19 pandemic, we find inspiration for defining a global state of climate alarm for at least 3 days a month in order to reduce emissions as described above.

This state of climatic alarm should comprise, at least, the following.

- It should be a global law legislated by a competent international body, such as the United Nations, and ratified by all governments.
- It should fundamentally affect countries that contribute the most to global emissions. In order to meet the abovementioned projections, this global climate emergency should crucially be implemented in the 69 countries that contribute 97% of the planet's total emissions (Le Quéré et al., 2020), while the remaining developing countries could initially be excluded. If only some and not all of the abovementioned 69 countries were to comply, the effect would be severely limited and unable to achieve the desired goal.
- The state of global climate emergency would necessarily require that most of the CO2 emissions are suppressed, with the exception of the essential sectors needed to cover people's basic needs. These would be determined within the context of this state of climate emergency. Air traffic based on internal combustion engines would be drastically reduced during these N days per month, as well as all non-electric surface transport. This does not mean confining people or limiting their movements during this declared period, unless said activities are associated with CO2 emissions. Any mobility based on renewable energies that do not emit CO2 would be allowed and even encouraged. Non-emitting industrial activities would be permitted and reinforced while those associated with the prohibited emissions would be discouraged during these N days per month each year until 2030.
- States should ensure that anthropogenic activities with CO2 emissions do not increase outside the state of emergency as compensation for the inactive period. The penalties for going beyond the reference threshold should be drastic and forceful, not economic—as some industries may calculate profitable strategies to counterbalance any sanctions.

CONCLUSIONS

Despite warnings from the scientific community in recent years about the importance of avoiding the irreversible effects of global warming by reducing GHG emissions and declaring a climate emergency, the concentration of CO2 in the atmosphere continues to increase. Nevertheless, a new legal and political framework has emerged, showing us how to intervene more efficiently and forcefully. Specifically, a large number of countries decided to reduce the incidence of COVID-19 by significantly reducing mobility and non-essential economic activity. During this period, CO2 emissions decreased significantly. Our proposal for declaring a global state of climate alarm is inspired by the reduction in emissions resulting from this decreased activity. Unlike other declarations of climate emergency to date, the explicit one proposed here should be imposed immediately and with the utmost urgency. It should be well defined by international jurists and can become a turning point in the fight against climate change. It would serve as the ultimate tool for combatting the imperative severity of climate change, just as it was used for the COVID-19 pandemic.

Based on estimates by Le Quéré et al. (2020), a 4–7% reduction in global CO2 emissions occurred as a result of the shutdown of activities in the six sectors analyzed by the authors over the approximately 40 days of containing the COVID-19 pandemic in some period between January and April 2020 (depending on the country). However, according to the calculations presented in Section 2, it won't be possible to achieve a 55% of reduction of CO2 emissions by only limiting a 3 days per month (40 days per year) the activities emitting CO2. To achieve a 55% reduction of emissions of CO2 by 2030, it's needed a more restrictive limitation in the activities emitting CO2 than 3 days per month.

It is needed to increase the number of days per month to achieve this goal. By reducing a 7% per year, it will be limit around 26 days per month the CO2 emissions, which it has not sense following the current economical model. If the number of days of CO2 limitation is reduced, the goal to get a 55% of reduction by 2030 cannot be reached. Analyzing these results, to reach the EU's goal of a 55% of reduction of CO2 by 2030 should be reformed. In addition, without any legal framework able to apply limitation on the days emitting CO2, this goal will not be done. The climatic alarm should provide a legal political frame for the implementation of this restriction.

Imposing the global climate emergency in the manner suggested here, renamed as climatic alarm, is not free of controversy. Above all, it implies several economic problems, such as:

- Financial compensation for companies and workers practicing these 3 days of inactivity.
- Governments experiencing an inevitable decline in their gross domestic product (GDP).

This article does not aim to propose solutions to these specific problems and the implication of the proposal it has been done here, as they correspond more to experts in economics and international politics. What we propose here is to address the immediate, serious, and urgent problem of reducing CO2 emissions in order to avoid the irreversible effects of global warming due to climate change, as they are proving to be disastrous on human societies, the economy, and biodiversity. Failing to act decisively could result in a 7% reduction in the world's GDP over the next decades (https://www.nber.org/papers/w26167). According to Nordhaus and William's (2007) well-known Stern Report, the costs and risks of climate change are equivalent to losing 5% of global GDP each year, in perpetuity. In contrast, the effects can be mitigated by an annual investment of 1% of global GDP, mainly in emission reduction policies. Declaring a state of climate emergency in the way that we describe appears to be precisely the most effective tool for meeting these goals.

If we are unable to stop most emissions before 2025 more than several days a month through this proposed state of climate emergency, it is not realistic to conceive of any other means for achieving the goals that have been set to stop global warming, the consequences of which will be more negative for economies and social inequality than if we were to stop all non-essential CO2-emitting activities for several days a month over some years.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

JM has proposed the idea, done the calculations, and has written the manuscript. MV has revised the calculations and reviewed the manuscript. DP has reviewed the calculations and reviewed the manuscript. All authors contributed to the article and approved the submitted version.

REFERENCES

Asayama, S., Bellamy, R., Geden, O., Pearce, W., Hulme, M. (2019). Why setting a climate deadline is dangerous. *Nat. Clim. Chang.* 9, 570–572. doi: 10.1038/s41558-019-0543-4

Flaxman, S., Mishra, S., Gandy, A., Unwin, H. J. T., Mellan, T. A., Coupland, H., et al. (2020). Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe. *Nature* 584, 257–261. doi: 10.1038/s41586-020-2405-7

Friedlingstein, P., Jones, M. W., O'Sullivan, M., Andrew, R. M., Hauck, J., Peters, G. P., et al. (2019). Global Carbon budget 2019. *Earth Syst. Sci. Data*. 11, 1783–1838. doi: 10.5194/essd-11-1783-2019

Goel, P., Kaur, H., Kumar, R., Bilga, P. S., and Aggarwal, N. (2021). "Analysis of Air Quality Index During Lockdown: A Case of Ludhiana District-Punjab," In: *Sustainable Development Through Engineering Innovations*, eds Singh, H., Singh Cheema, P. P., and Garg, P. Lecture Notes in Civil Engineering. (Singapore: Springer).

Jackson, R. B., et al. (2019). Persistent fossil fuel growth threatens the Paris Agreement and planetary health. *Environ. Res. Lett.* 14, 121001. doi: 10.1088/1748-9326/ab57b3

Le Quéré C., Jackson, R. B., Jones, M. W., et al. (2020). Temporary reduction in daily global CO_2 emissions during the COVID-19 forced confinement. *Nat. Clim. Chang.* 10, 647–653. doi: 10.1038/s41558-020-0797-x

Lenzen, M., Li, M., Malik, A., Pomponi, F., Sun, Y. Y., Wiedmann, T., et al. (2020). Global socio-economic losses and environmental gains from the Coronavirus pandemic. *PLoS ONE* 15, e0235654. doi: 10.1371/journal.pone.0235654

Nordhaus, R., and William, D. (2007). A review of the stern review on the economics of climate change. *J. Econ. Lit.* 45, 686–702. doi: 10.1257/jel.45.3.686

Peters, G. P., Andrew, R. M., Canadell, J. G., Friedlingstein, P., Jackson, R. B., Korsbakken, J. I., et al. (2020). Carbon dioxide emissions continue to grow amidst slowly emerging climate policies. *Nat. Clim. Chang.* 10, 3–6. doi: 10.1038/s41558-019-0659-6

Watts, J. (2018). We have 12 years to limit climate change catastrophe, warns UN. Available online at: https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report (accessed May 20, 2021).

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Reflexive Green Nationalism (RGN): A sociological antidote to the climate crisis?

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What can theories of nationalism and the nation-state tell us about climate change? Much of the available literature, including works by prominent thinkers Ulrich Beck and Bruno Latour, identify it as a collective global challenge rather than a local and national one. But is it really so? This article develops an original theoretical framework integrating the theory of "reflexive modernity", theories of nationalism, and case studies of green nation-states. The goal is to change the observation point and search for original solutions to the climate crisis. Building on this theoretical framework, this study puts forward the following claims: (1) climate change is undeniably a global phenomenon, but its causes are national. It can be traced back to a small number of top polluting nation-states (the US, China, Russia, India, Japan and EU28) whose historical share of carbon dioxide and other greenhouse gases, the main cause for global warming, surpasses 74%; (2) Most of these nation-states are entrenched in Resource Nationalism (RN), a form of nationalism that sees the environment as a resource to exploit; (3) there exist forms of sustainable nationalism, which this study conceptualizes as Reflexive Green Nationalism (RGN); (4) the solution to climate change is local rather than global. It depends on top polluters' capacity to re-modernize and develop RGN; and (5) according to the Intergovernmental Panel on Climate Change, if emissions are not reduced by 43% by 2030, the world is likely to cross the tipping point into a global climate catastrophe. Therefore, updating these nation-states and their ideology to more sustainable forms is humanity's best shot at halting the climate crisis.

KEYWORDS

environmental sociology, climate change, nationalism, nation-state, global risks strategies, climate change strategies

Introduction

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. In 2022, it consisted of "270 scientists from more than 60 different countries" who contributed to the most recent IPCC report (IPCC, 2022). The report is the latest of a number of denunciations of political immobility vis-à-vis the climate crisis and a serious warning that if no significant effort is made in the 2020–2030 decade to reduce carbon dioxide emissions and other greenhouse gases (GHG), the temperature of the planet will rise above the 1.5°C threshold of pre-industrial levels by 2040 (IPCC, 2022). This will set in motion a series of events related to changes in weather patterns resulting in extreme weather events, droughts, fires, rising

sea levels, floods, and as a result, dramatic issues on the social level such as massive immigration and potentially a large number of dead.

It is clear that we are approaching an irreversible tipping point that jeopardizes human and non-human life on this planet (Conversi, 2020), and yet, the current historical conjuncture doesn't seem to provide the world with a favorable stage where the climate crisis can be successfully addressed. In fact, it poses two main problems. The first is that most countries are still recovering from the COVID-19 Pandemic and seem to focus more on shorter term goals such as recovering from the disruption brought by the virus, regaining economic competitiveness on the international stage, and restoring social life as it was before 2020. Moreover, other global risks are seen as more imminent than climate change, such as the threat of nuclear war stemming from the ongoing Russia-Ukraine conflict and/or the many other problems that this conflict brought, i.e., the increasing price of gas and oil, and problems in the export of wheat that are affecting most countries in the world, especially the poor.

It is true, climate change is a different global risk (Beck, 2008). Unlike pandemics, financial crises and wars, it is almost invisible and spreads over a longer period, two elements that make it a particularly insidious threat. And yet, IPCC scientists were unequivocal that a change of course is needed now, not after the Pandemic or the Russia-Ukraine conflict. To state it bluntly: if high-carbon emissions continue in the world, especially in top polluters such as China, the USA, Russia, EU28,[1] and India, temperatures will rise above the 4°C threshold by 2100. To put things in perspective, the planet has not seen temperatures rising more than 2.5° in 3 million years (IPCC, 2022). Scientists have warned that we have a very short period, around 10 years, to drastically decrease the use of fossil fuels and implement a series of strategies that will reduce the human impact on the environment. This is not the place for details, which can be found in the 3,675 pages of the freely-downloadable IPCC report, but to summarize: if nothing changes, we will face the climate change worst case scenarios. An anthropogenic catastrophe of global proportion.

The second problem is that we live in a world system of nation-states dominated by nationalism (Brubaker, 2015; Malesevic, 2019). Nationalism is intended here as an ideology "entailing the belief that the world is naturally divided into nations that have distinctive cultural and physical characteristics inscribing them on the human landscape over time" (Posocco, 2022, p. 10). It is a highly anthropocentric ideology that puts humans before the environment, which is preponderantly inscribed in and perceived as a "part" of the nation-state. Hence expressions belonging to the realm of banal nationalism (Billig, 1995; Fox, 2008; Fox and Miller-Idriss, 2008; Skey, 2009) or everyday nationalism such as "national environment" or "national territory," "national lakes," "national mountains," "national parks," etc. There are many forms of nationalism, i.e. ethno-nationalism, populist nationalism, economic nationalism, and most of them see the environment as something to exploit, a "resource,"[2] allegedly for the good of the nation, although "only a tiny minority of the population actually benefits from their extraction and exploitation" (Conversi, 2020, p. 630). However, there are also more critical and greener forms of nationalism that drive a small number of nation-states, such as Norway, Denmark, Sweden, Switzerland, and Germany, to protect their national environment and develop more sustainably (Conversi and Posocco, 2022).

While most of these forms of nationalism very often overlap and merge, they are all ideologies – the term ideology is to be understood here as a set of ideas that provides people with guidelines that are necessary to interact "with" and "in" the world (Althusser, 2001)–that lock up nation-states in themselves, "making them principally worry about matters of internal security, domestic homogeneity and national growth and less about global issues and other nations' troubles" (Posocco and Watson, 2022, p. 2). All national governments, green or not, acting on the international stage are predominantly driven by nationalism; their primary goal is to preserve the state and the nation, to maximize their security and their relative power position in relation to other nation-states (Waltz, 1979; Mearsheimer, 2001). This strongly impacts nation-states' capacity to cooperate and coordinate, let alone to stand in solidarity and support each other, which some have pointed to as key factors when it comes to global risks (Conversi, 2020; Eriksen, 2021).

For the sake of clarity, we know the science of climate change and how to address it. Scientists gave us the knowledge and the answers to most of the problems stemming from it, and we could start to fix them right now (Harvard Center for Climate, Health, and the Global Environment, 2021). What we don't know is how to make sure that the above-mentioned top-polluting nation-states, which also happen to be the most powerful nation-states on the planet, apply the required strategies in the window of time we have left. So far they haven't. Indeed, most of these nation-states lag, in terms of climate change performance (CCPI, 2022), dangerously behind other greener nation-states. This is where social science can help in understanding why some nation-states improve their management of the climate crisis while others do not. The analysis of the various forms of nationalism that drive nation-states helps us understand why some stick to Resource Nationalism (RN), an ideology at the core of which is the exploitation of the environment, while others develop more

1 For the sake of clarity, a small number of nation-states within EU28 are among the most dynamic in terms of forms of green transition. These are Sweden, Norway, Denmark, Germany.

2 Describing nationalist ideologies that see the environment as a resource that humans can exploit, Daniele Conversi (2020) came up with the term Resource Nationalism (RN).

sustainable forms, such as Green Nationalism (GN) (Conversi, 2020; Conversi and Friis Hau, 2021; Conversi and Posocco, 2022; Posocco and Watson, 2022).

Attempting to contribute to an emerging body of literature that bridges nationalism studies and climate change, the main claim of this article is that, while climate change is undeniably a global phenomenon, its causes and solutions are national and can be found in a small number of top polluters. Making this claim is to confront numerous studies, including the work of Beck (2009) and Latour (2018), which argue that climate change is a collective global challenge and that other forms of polity and ideology, such as the cosmopolitan state and cosmopolitanism (Beck), and the terrestrial society and terrestrialism (Latour), are a better fit to address it.

And yet, a focus on the national rather than global arenas is not without logic. In fact, it is a choice in line with risk-mitigation theory, which divides strategies into *unanimous, majoritarian* and *local* (Yudkowsky, 2008). While unanimous strategies are unworkable because they require the cooperation of all nation-states, and majoritarian strategies require decades to make most but not all nation-states agree on the solutions, local/national strategies require a much narrower, and more feasible, focus on a single or a few nation-states (Yudkowsky, 2008, p. 334). Especially after scholars acknowledged, en masse, the failure of global governance in triggering a global green transition (Goldin, 2013), focusing on single top polluters, i.e., the US, China, India, EU28, Japan, and Russia, (see Figures 1–3 below bringing evidence of these countries' CO2 emissions [Figure 1 shows cumulative emissions from 1750 to present; Figure 2 shows emissions from 1980 to present, and Figure 3 shows the level of emissions in 2019]) makes even more sense. Such focus shows that the main obstacle to resolve the climate crisis is the incapacity to shift from Resource Nationalism to Green Nationalism. So far, these nation-states have proven incapable of developing forms of nationalism that are more reflexive (Beck et al., 1994; Beck, 2016), thus self-critical and ready to implement strategies that would make them greener and less disruptive to the national and global environment. Hence the second claim of this article: if, as it seems, climate change is a problem that falls on the nation-state and overall on nationalism as the ideology that drives it, then there is an urgent need to trigger re-modernization and "green" nationalism. The questions are: what are the factors that prevent nation-states from re-modernizing and adopting green nationalism? Can we, and how do we, trigger it?

Nation-state, nationalism and re-modernization vis-à-vis climate change

Before 2020, literature bridging nationalism studies and climate change was lacking, and there remains a dearth of such literature (Conversi and Posocco, 2022). This is surprising given that as early as 1986 Ulrich Beck pointed to the nation-state as one of the structural elements of modernity that contributed to giving birth to what he epitomized as "Risk Society" (Beck, 1986). Beck wasn't the only one recognizing the importance of the nation-state system vis-à-vis global commons. In the early 1990's, David Held was one of the first scholars pointing to the inadequacy of the nation-state system to manage global risks (Held, 1995). And yet, nobody posed the question of re-modernizing this system and what characteristics the new nation-state should possess. The same is true about nationalism, the ideology at the basis of the nation-state. Most studies focused on critique, looking at the elements of nationalism that make nation-states incompatible with the struggles against the climate crisis. Even Beck's posthumous book The Metamorphosis of the World Bank (2022) theorized the replacement of both the nation-state and nationalism with cosmopolitanism and cosmopolitan communities. The same is true for Latour, who in *Down to Earth* (2018) rejects the present system and ideologies, dismissing both local and global and, with them, the national and all it comprises (including political groups that he calls "the right and left") to propose the concepts of terrestrial and terrestrialism, a society in which any human action must be subject to scrutiny vis-à-vis the impact that it has on the planet. While the latter is (obviously) a necessity, Latour doesn't say which institutions should supplant the existing ones, how to convince powerful oil business and corporations, entangled in a multi-layered web of interests of all sorts (economic, political, social, national and international), to stop drilling, mining companies to stop their disruptive extractive activities, farmers to stop intensive farming, chemical plant companies to stop dumping their waste into rivers, oceans and land, nuclear plant companies to stop producing nuclear waste, or top polluters, such as China, to convert immediately, and more fully, to the environmental creed.

Prasenjit Duara–perhaps the first, in 2020, to exhaustively outline the interrelations between global risks and nationalism at the annual conference organized by the Association for the Studies of Ethnicity and Nationalism (ASEN)–saw nationalism as the heart of all the crises in the modern world, but even he did not have concrete solutions beside appealing to a rather abstract concept of hope: "I conclude the essay not with a ready answer but with thoughts about why we cannot not function without the hope of human agency" (Duara, 2021, p. 620). Around the same time, in 2020, Daniele Conversi stressed the importance of connecting the field of nationalism studies to the phenomenon of climate change and identified a form of nationalism, green nationalism (GN), which could function as an alternative to resource nationalism (RN). The latter is characterized by the exploitation of nature by nation-states and by the denial that such exploitation is harmful to the planet. Forms of GN identified among minority nations such as Catalonia and Scotland, would involve an environmentally-focused agenda

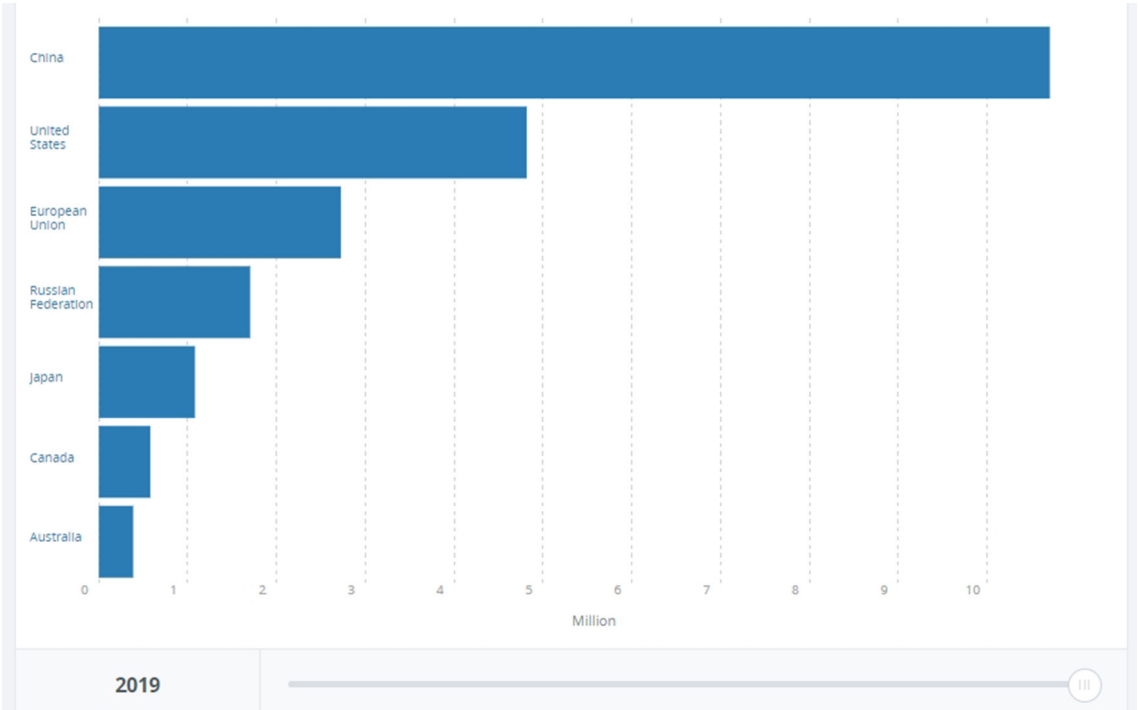

FIGURE 1
Share of CO2 emissions of China, the United States, EU28, Russian Federation, Japan, Canada, and Australia. Year: 2019. Data and graphic from the World Bank, at https://data.worldbank.org/indicator/EN.ATM.CO2E.KT?contextual=default&end=2019&locations=CN-US-EU-RU-JP-AU-CA&start=2019&view=bar (accessed August 9, 2022).

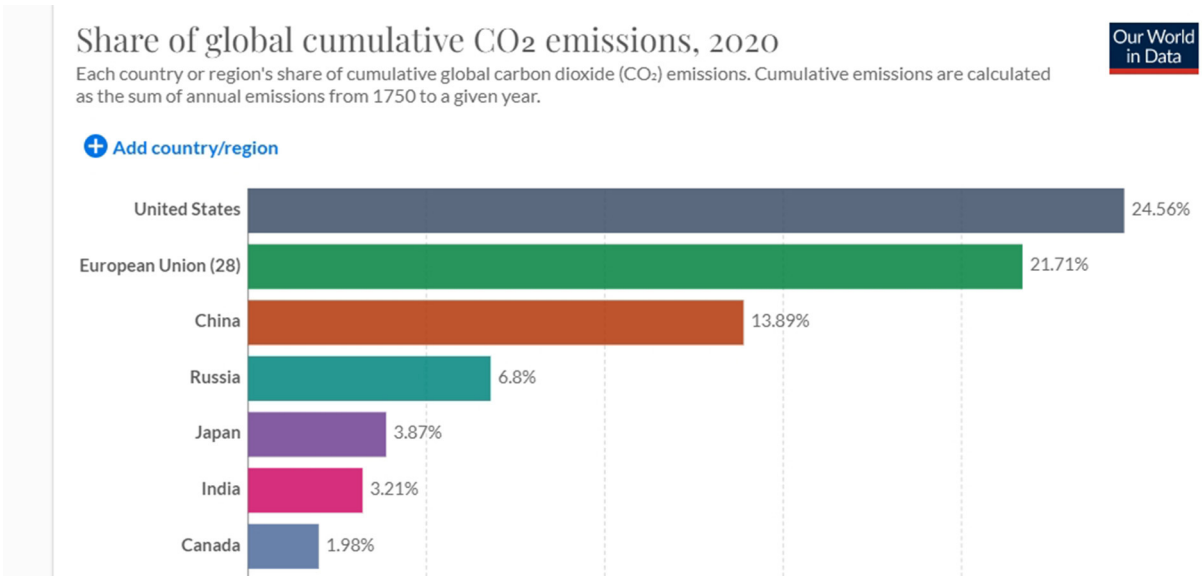

FIGURE 2
Historical share of carbon emissions of the US, EU28, China, Russia, Japan, India, Canada, Australia. Source Our World in Data, 2020, freely accessible at https://ourworldindata.org/.

used by these stateless nations for their political, rather than environmental, goals (i.e., political autonomy). Another work by Conversi stressed the importance of what he called "exemplary ethical communities": "human communities with a track record of sustainability related to forms of traditional knowledge and the capacity to survive outside the capitalist market and

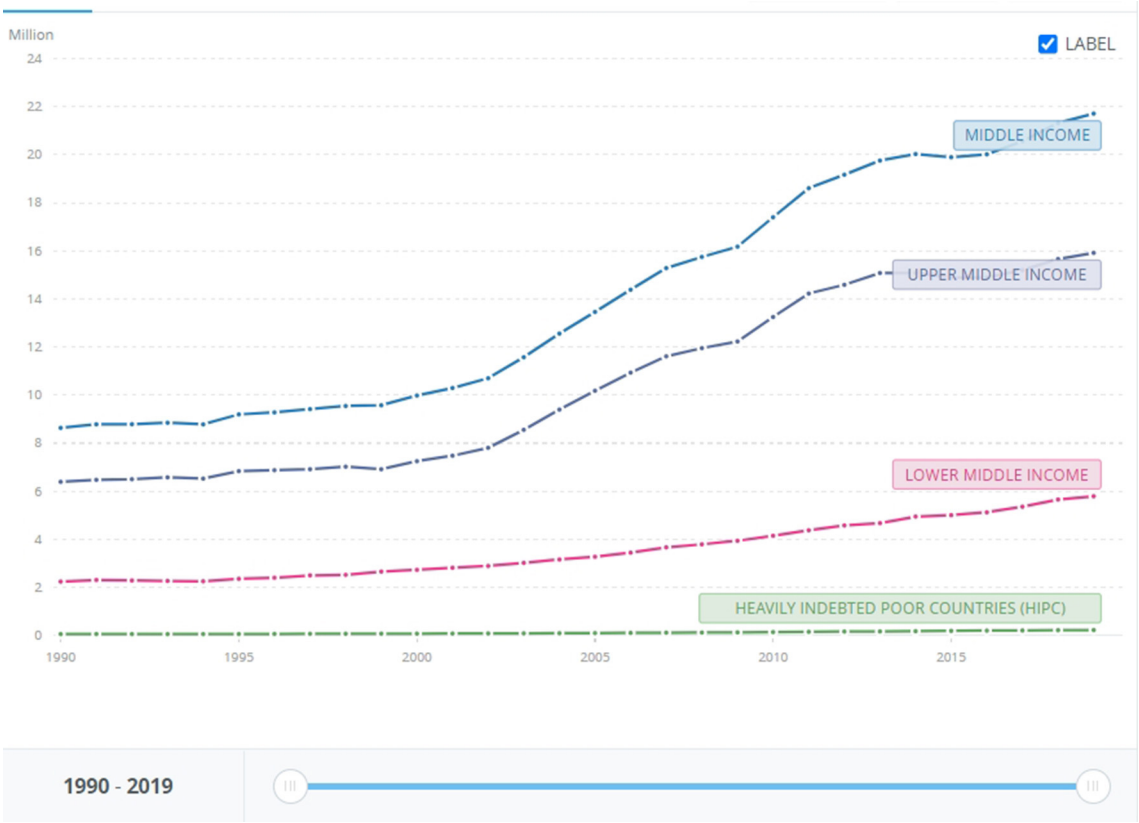

FIGURE 3
CO2 emissions in relation to countries' income worldwide. 1990-2019, Source: World Bank. At https://data.worldbank.org/indicator/EN.ATM.CO2E.KT?contextual=default&end=2019&locations=XP-XE-XT-XN&most_recent_year_desc=false&start=1990&view=chart (accessed August 9, 2022).

nation-state system" (Conversi, 2021, p. 5582). None of these studies saw the nation-state and nationalism as potentially suited to host forms of nationalism that are environmentally friendly at the larger national level.

Posocco and Watson (2022) were the first to tentatively outline such a potential in the nation-state and suggest that some nation-states already walked a greener path. They focused mainly on Germany, but pointed to the need for more investigations insofar as other nation-states were headed in the same direction. Their study provided evidence that, starting with the 1970's, mass mobilization on the part of civil society found an attentive listener, rather than an opponent, in the German state. This resulted in environmental policy sustained in the long run and the development of a tradition of environmentalism that today is half a century old (although the first glimpses of ecologism are to be found as far back as the second half of the 19th century). Nationalism and environmentalism intertwined to such an extent that, as Uekötter (2014) put it, the latter became a structural part of the national project. Another key development is that having a healthy national environment became something in which Germans found pride as a nation. Fuelled by environmental awards such as the EU's award for the greenest cities in Europe, and environmental rankings such as the Climate Change Performance Index (CCPI), this sentiment reinforced green nationalism in Germany, strengthening the German people's belief that caring for the environment is something good and worth pursuing.

Further studies by Conversi and Posocco (2022) focused on nation-states that scored very high in the IPCC and CCPI rankings: Germany, Sweden, Switzerland, Norway, and Denmark. They found that these countries share elements that made them more suitable than others to become greener. Particularly, they highlighted the following: (1) developments of ecologism and environmentalism rooted for a century or more, (2) the lock-in of environmentalism as an ideology shared at all levels of society, (3) free and effective environmental movements, (4) inclusivity and welfare, and (5) the bonding between nationalism and environmentalism leading to national pride in environmental achievements.

Such developments in the above-mentioned nation-states are directly tied to the upheaval brought by modernity in all spheres of society. Modernity is intended here as a new society

developed first between the 18th–19th century in Western Europe, based on industrialization, urbanization, science and technology, slowly supplanting society based on religion, and the birth of the modern nation-state (Beck, 2008). While bringing positives, this society also gave birth to unintentional side-effects (Beck et al., 1994) such as air pollution, large amounts of waste, soil depletion, water pollution, and an increase in diseases due to globalization, urbanization, and population growth.

For the fathers of reflexive modernity, Beck et al. (1994), side-effects are essential to make societies aware of the problems they create, apply solutions and avoid catastrophes. For example, since the 19th century, ecologic movements grew in number and size as a reaction to the side-effects of modernity. Acknowledging the shortcomings of modern society, Marx developed "Das Kapital," Ibsen conceptualized *Friluftsliv*, "a philosophical lifestyle based on experiences of the freedom in nature and the spiritual connectedness with the landscape" (Gelter, 2000, p. 78), Henry David Thoreau played a similar role in the US, while John Muir advocated for the creation of national parks that would protect large regions of the country from mining, drilling, and other forms of exploitation of nature. These are just a few examples of reactions by individuals who witnessed the side-effects of modernity on 19th century and early 20th century societies and worked, even before modernization theory, to re-modernize modern society.

Environmental movements born in the second half of the 20th century, which John McNeill identified as the starting point of the Great Acceleration toward anthropogenic climate change (McNeill, 2016), must be seen through the same lens, stemming from solid evidence and increasing general awareness that harm was being done to nature whose effects would last generations, and that a radical change of course was needed. Especially during what is generally recognized as the environmental turn in the 1960s-1970s, environmental policy increasingly regulated human-nature relations while the idea that nature is something to protect, not to exploit, locked in. Initially in the West, and later almost everywhere, voices rose to demand modernity to re-modernize. The reader might remember the first Earth Day on April 22, 1970, which gathered millions of people around the world and that today can leverage more than 1 billion people in more than 193 countries (Rome, 2010). And yet, the opportunities of a more sustainable society arising from "the bads" (Beck, 1999, p. 152) were only embraced by a restricted number of nation-states. Most others ignored the science and kept business as usual. Most of them are still stuck in outdated methods of modernization although valid alternatives exist, i.e., in terms of energy production and consumption, China is still highly dependent on coal.

This evidence casts grave doubts on modernization theory, thus on the reflexive capacity of modern nation-states to solve the problems that modernization projects create. The way the world is, or rather is not, dealing with climate change (but the same could be said about a number of other global risks, i.e., nuclear conflict, nuclear waste and loss of biological and cultural diversity) provides a host of evidence for this. Even those exemplary green nation-states (Conversi and Posocco, 2022) that historically are ranked very high in terms of climate-change performance have been warned, in the last CCPI report, that they too need to do more. The reason why some nation-states learned from their mistakes and attempted to re-modernize while others lagged (and still lag) behind depends mainly on the problems and obstacles of re-modernization.

The problems of re-modernization

Even a superficial look at modern industrialized nation-states such as the US, China, Russia, Japan, India, and EU28 shows that while climate change is a global problem, its causes are national. These 33 nation-states' historical share of carbon dioxide and other GHG emissions surpasses 74% (see Figure 2 below). Considering that the world is divided into 193 nation-states, the remaining 26% of carbon emissions is shared among 158 countries. A very straightforward equation shows that most of them, especially those with low income and the highly indebted poor countries (HIPC) (World Bank, 2022. It is worth noting that their emissions are measured in terms of thousand, not million, tons of carbon dioxide.), weighed in the range of 0.1–0.3% in comparison to top polluters (see Figure 4 below).[3] Among these countries, poor nation-states such as Mozambique, Zimbabwe, Puerto Rico and Myanmar have no role at all in the climate crisis and yet, according to the Global Climate Risk Index (2021), climate change affects them the most (see Figure 3 below). Data from the World Bank shows that the above-mentioned top polluters are still emitting most of the carbon dioxide that endangers humanity (see Figure 1). Although it is important to make distinctions, i.e. China's emission are still rocketing while the one EU28 are, albeit slowly, decreasing (see Figure 5 below), not only is this small number of nation-states historically responsible for leading the world toward the climate catastrophe, but they are also not doing much, certainly not enough, to prevent it.

While China and India, both developing countries, have often justified their rocketing emissions as the unfortunate but necessary modernization efforts to compete with modern superpowers, the same justification doesn't apply to others who are fully modern and developed nation-states. This suggests there is no linear correlation between knowledge and re-modernization. Some nation-states do re-modernize, as is evident by the case studies of exemplary green nation-states such as Norway, Denmark, Sweden, Germany, and Switzerland, while others don't (Conversi and Posocco, 2022; Posocco and Watson,

3 With some expectations, countries such as Turkey and Ukraine seem to have a higher share of emissions, but these countries are the exception rather than the norm.

FIGURE 4
Share of CO2 emissions, low income and heavily independent poor countries. Notice the shift from Million to Thousand tons of carbon dioxide Year: 1990–2019. Source: World Bank at https://data.worldbank.org/indicator/EN.ATM.CO2E.KT?contextual=default&end=2019&locations=XM-XE&most_recent_year_desc=false&start=1990&view=chart (accessed August 10, 2022).

2022). The latter linger in old patterns of modernization, entrenched in unsustainability. The reason is that many things can go wrong, and they do, on the road to re-modernization that block knowledge from triggering reflexivity and change. We know almost nothing about it, as we lack a systematic study of the problems of re-modernization. This section will attempt to scratch the surface of a potentially significant field of study that will hopefully be the focus of future research.

Cullenward and Victor (2021) identified in the "inconvenient problems of politics" (2021, p. 7) the core factor that determines the success or failure of climate policy. They see politics as a key element for making significant progress in reducing emissions. Similarly, we identify it as a key element for re-modernization. In fact, political systems define the processes through which nation-states' governments make official decisions for the nation, i.e., incentivize green technology or not, create what Cullenward and Victor (2021) call "effective market-based regulations" or opt for other types of climate regulations, outlaw mining and drilling or allow them, etc.

What's important here is that while top polluters, especially China, the US, Russia, and India, have political systems that are structured differently and are driven by different ideologies, some factors that they share are at the core of their failure in terms of re-modernization. Above all, politics in these nation-states end up serving the interests of a small number of powerful groups, which a solid body of literature has proven being linked to the exploitation of natural resources such as oil and gas,

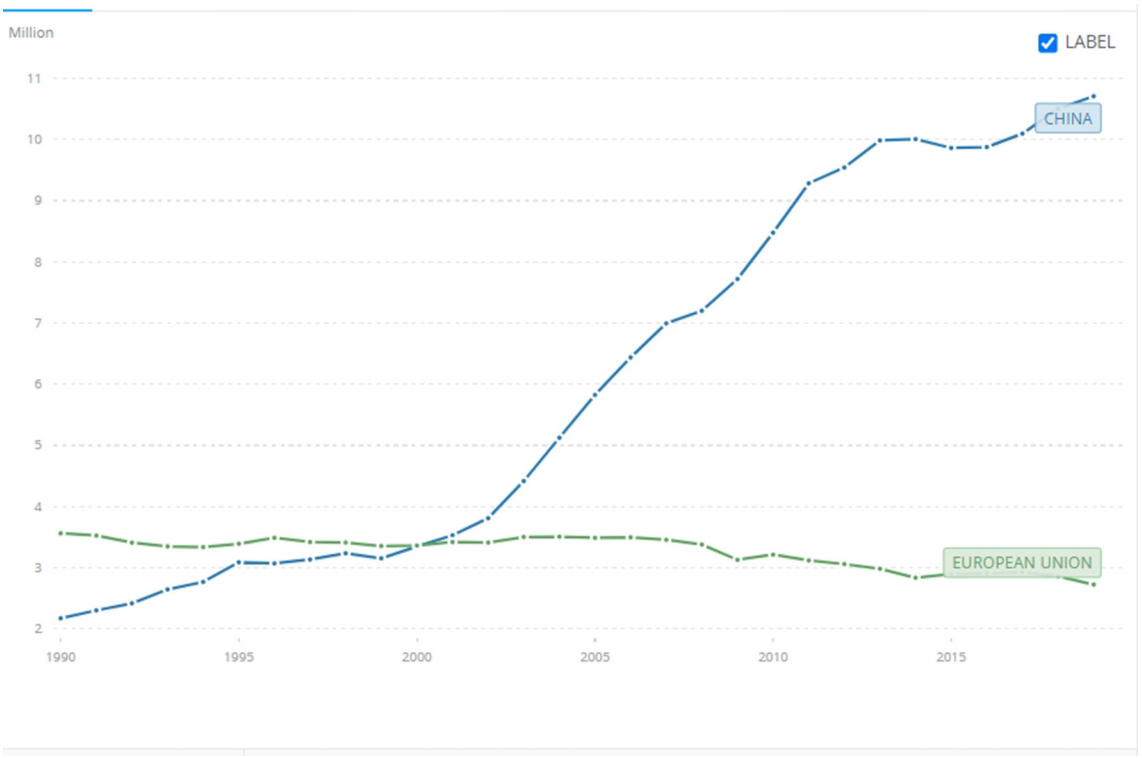

FIGURE 5
CO2 emissions. China and EU28 in comparison. Timeframe: 1990-2019. Source World Bank: https://data.worldbank.org/indicator/EN.ATM.CO2E.KT?contextual=default&end=2019&locations=CN-EU&most_recent_year_desc=false&start=1990&view=chart (accessed August 9, 2022).

rather than the Aristotelian *to koinei sympheron* (the common interest). For example, according to The Global Wealth Report (2021), 110 Russian citizens control 35% of the total household wealth across the vast country, most of which is connected with natural resources such as gas and oil. Given this evidence it is not surprising that Russia is in 56th position out of 64 nation-states in terms of Climate Change Performance (CCPI, 2022), and in 126th position in the 2021 Democracy Index (DI, 2021). China is in 148th position, identified as an "authoritarian regime," and India is in 46th position, a "flawed democracy." The US shares the same label as India and is in 26th position. While the US is ranked much higher than China and relatively higher than India, a study by Gilens and Page (2014) casts stark shadows over it. They analyzed 1,779 recent policy outcomes and found that economic elites and organized groups representing the interests of businesses linked to environmental exploitation (i.e., oil companies, gas companies, chemical companies) have a major influence on government policy (around 78%), while average citizens have little or no independent influence (around 5%).

Corporate interest, personal profit, and corruption entering the political arena of top polluters seem to be a key factor hindering re-modernization. In fact, these countries were unable to adjust their political systems to better address these and related environmental problems. They lacked reflexive governance, as Feindt and Weiland (2018, p. 662) put it, or institutional reflexivity, as Giddens (1991) defined it. They lacked 'the regularized use of knowledge about circumstances of social life as a constitutive element in its organization and transformation' (Giddens, 1991, p. 20). Reflexive governance would have led them to a deeper ideological shift at the structural level, involving democratization, increased representativeness, inclusivity supported (among others) by effective environmental movements, and welfare, which a recent qualitative study on green nation-states identified as important factors facilitating the implementation of successful environmental policy (Conversi and Posocco, 2022). In Germany, Sweden, Switzerland, Norway and Denmark, mass mobilization and political reflexivity by social-democratic states led to environmental policy sustained in the long run.

Other studies suggest that a synergy between top-down and bottom-up forces (which is difficult to achieve in authoritarian systems such as China or poorly representative systems such as the US) seems to be a condition sine qua non for environmental success. Without it, even when governments attempted to regulate dirty industries, market and coordinative instruments (Jordan et al., 2003), to implement environmental

policy (Lenschow, 2002) and integrate stakeholder participation (Feindt and Newig, 2005), they had very little success (Feindt and Weiland, 2018). Their strategies did not have a significant impact on the activities that generate climate change. This happens because, even when knowledge is institutionally reflexive–informed by science and political power (Giddens, 1994)–numerous other factors (discussed below) can, and do, hinder or slow down re-modernization.

Not only politics. Other obstacles to re-modernization

Powerful deniers might (and do, according to Klein, 2020) fight even harder when they think that governments will implement climate policy and negatively affect their interests. Another example that takes into account micro-sociological dynamics comes from an Italian case study. In 2019, Italy's government acknowledged the necessity of incentives toward green mobility and construction, and made 60 million euro available toward these sectors. An investigation led by Italian newspaper *Libero* (Free), later confirmed by the Italian judiciary, on 22 big car dealers in Italy found that, as soon as the season of incentives started, they all increased prices. To summarize, an electric or hybrid car was more affordable before incentives than after. There was also the "diesel dupe" scandal regarding the German automobile industry, particularly involving Volkswagen cars sold to foreign markets. The EPA (US's Environmental Protection Agency) found that Volkswagen had intentionally programmed diesel cars to only activate their emissions controls during laboratory emissions while when driving they emitted 40 times more nitrogen oxides that contribute to the formation of smog and acid rain, as well as affecting tropospheric ozone (BBC, 2015). The marketing strategy of Volkswagen was to sell the idea that diesel cars were as green as the others. This would allow them to keep selling them, thus making money, without investing in a new expensive productive chain manufacturing less polluting vehicles. While in both the Italian and German case there have been governmental investigations, what this evidence tells us is that knowledge and governmental action are not sufficient to re-modernize, and that the road toward re-modernization is filled with obstacles even when governments decide to take it. In this perspective, Bruno Latour was right when he argued that awareness (or knowledge) is one thing, but control is quite another matter (Latour, 2018).

Another issue is that, besides producing enormous capabilities to re-modernize, knowledge is also a potential source of great destabilization (Giddens and Pierson, 1998). Everywhere, knowledge of climate change has been a source of deep fractures and clashes within and between supporters and deniers. Among others, these clashes have materialized in the killing of numerous environmental activists, the latest of which, at time of writing, are Dom Phillips and Bruno Pereira, murdered in the extreme west of the Amazonas.[4] Many studies point to indigenous communities in Colombia, Ecuador, Peru, Bolivia, Venezuela, and Brazil, as well as countries in the Asian hemisphere and on the African continent being approached by corporations and states interested in their territories. Building a new dam, increasing the national food production or extracting raw material are some recurring causes of wars that indigenous communities around the world fight, usually against much stronger opponents. These communities are systematically under attack, and according to a study by Amnesty International (2022), their people are often treated as second-class citizens although they have a much more sophisticated knowledge of the natural world; their land, forests and biodiversity flourish; and they live sustainably creating barriers against climate change. So much so that Conversi (2021) epitomized these communities as "exemplary ethical communities," living examples for a potential sustainable future in the Anthropocene.

Clearly, clashes do not occur just in remote areas of the world but also in the very centers of modern societies, within government coalitions and communities. One recent example involved the US Democratic Party. In December 2021, coal investor and Senator John Manchin stated that he opposed the Democratic Party's energy policy (his own party) (The Guardian, 2022), which was a blow to Joe Biden's Green New Deal, the democrats' answer to Trump's renowned denialism. The event is clear evidence of major economic and political interests behind the climate crisis and the social and political conflicts that the latter gives birth to.

Finally, another key problem of re-modernization is that re-modernization theory doesn't deal with the role of discursive constructs and misinformation in hindering re-modernization. The first has to do with how discourses on climate change can include or exclude people from participation in top-down or bottom-up processes (Lassen et al., 2011). The second has to do with a phenomenon that Levy called "bad thinking epidemic" (Levy, 2021): society's inability to create a healthy epistemic environment where people can distinguish between reliable and unreliable sources of information. The two are related insofar as successful discursive construction is crucial to (1) create more explicit and specific knowledge about climate change and (2) deliver political communication 'to actors about actions on both a global and a local level' (Lassen et al., 2011, p. 425). When coming to mass mobilization – the environmental activism led by various environmental actors - the lack of such communication might (and does) result in vagueness creating tension in terms of "rationales, relevant participants, invited vs. self-organizing forms, when to involve, and context sensitivity"

4 News that the two were murdered on June 5, 2022 was given by The Guardian. At *https://www.theguardian.com/world/ng-interactive/2022/jun/17/the-disappearance-of-dom-phillips-and-bruno-pereira-a-timeline* (accessed June 17, 2022).

(Lassen et al., 2011, p. 425). Not knowing exactly what one could or should do is not the only problem. Misinformation affects people's knowledge of the climate crisis, as a result a consistent number of people deny it [phenomenon of climate change denial, see Brulle (2020)], underestimate its consequences and/or avoid taking the necessary countermeasures (i.e., enacting effective climate policy, greening infrastructure and production processes, adopting sustainable behaviors such as recycling, investing in green energy and transportation). For Levy (2021), the main point is the crisis of media, especially social media. He argues that the environment in which people are given and/or seek information is so wide, complex and fractured, where everything and the opposite of everything seems to be true, that those who do not have specific knowledge on, say, climate change, lose any point of reference. This process, which also involves the phenomenon of fake news (among many publications on the issue, The Misinformation Age by O'Connor and Weatheral (2019) and Latour's Down to Earth (2018) deeply and critically engage with it) is another piece (perhaps a relevant one) adding to the problem of re-modernization, as it gives way to numerous tensions, at all levels of society, slowing down or hindering it.

Nationalist ideology, reflexivity, and re-modernization

Ideologies consist of beliefs, values, and judgements about the world that guide people through life, their interactions in society, with other societies and people and also with the natural world (Posocco and Watson, 2022). Changing governments' and people's ideas about and behaviors toward nature is, first and foremost, a matter of ideology. Latour's concept of a "Terrestrial" mode of living (Latour, 2018), which involves a total shift from viewing the planet as a universe "in" which humanity lives to a universe "with" which humanity develops, requires a change in ideology. The same is true for Ulrich Beck's concept of cosmopolitanism and cosmopolitan society (Beck, 2002, 2009). For changing the way we treat, or threaten, nature, the ideas, thus the ideology that drive our beliefs on and relationship with nature, must change.

And yet, we must face reality. We don't live in a cosmopolitan nor a terrestrial world, we live in a world where the nation-state is the dominant political reality (Brubaker, 2015) and nationalism is the dominant political ideology (Malesevic, 2019). Nationalism has deep and well-established roots that shaped, and keep shaping, people's subjectivities and their ideas about and behaviors toward their state and fellow countrymen as well as other states and peoples. Everybody is a national in a way that goes beyond individual consciousness. As Zizek (1989) put it, one of the key characteristics of ideology is that it runs ubiquitously through society and everybody is influenced even when they think they aren't. It is in this ubiquitous and pervasive sense that nationalism also shapes the complex array of relationships between the nation, the national territory and the national environment (Posocco and Watson, 2022). Indeed, most of the causes of climate change reside in the way national ideology drives nationals' ideas of and behaviors toward the environment. If this is true, we must update the most common form of nationalism, Resource Nationalism (RN), to Green Nationalism (GN) as quickly as possible.

Major sources of inspiration come from case studies of green nation-states (Sweden, Norway, Denmark, Germany, and Switzerland), countries that took the "green way," which projected them to the top of both CCPI and IPCC rankings (Conversi and Posocco, 2022; Posocco and Watson, 2022). In these countries, the transition toward green nationalism was triggered by (1) evidence of the environmental risks that their modernization efforts created (i.e. too much CO2 emissions, poor air quality, bad waste management, problematic intensive farming, misuse of fertilizers in agriculture leading to soil depletion, etc.), (2) reflexivity (self criticism), (3) analyses of potential strategies and available technologies to resolve the problems, and (4) successful application of strategies. Although it is important to stress substantial differences between these "green" nation-states, i.e., Germany is characterized by a strong green party, whereas Scandinavian countries don't. For example, Norway doesn't have a strong green party. Its Climate Change Performance (see CCP Index)[5] is due to a number of factors, the most important of which is perhaps the fact that Norway is an "actively inclusive" state (Dryzek et al., 2002). Inclusivity means that environmentalists' demand are not only accepted (thus included in government debates) and turned into policy, but the state is keen on anticipating them. In addition, social democratic influence is strong in countries such as Norway and Denmark, which provide environmental (and other) organizations with the necessary funding to carry out their work, including drafting policy for the government and making sure that the latter correctly implements it. Switzerland is yet a different type of state, dominated by cantons characterized by strong autonomy, each one of them with their constitution, legislature (parliament), government and courts. The fact that these countries differ in the way they develop a green society is neither negative nor positive. Indeed, this element suggests that the roads to greening are many and potentially very different.

And yet, in spite of manifest differences, evidence gathered from existing comparative analyses shows that these societies' capacity to be reflexive, thus "self critical" (Beck, 2008, p. 79), assess the risks and act to avoid real catastrophes, was all but secondary (Conversi and Posocco, 2022). Their ability to re-modernize, thus to become better versions of themselves, was directly proportional to their ability to think critically. In addition, the knowledge created from the work of reflexivity was first and foremost directed toward the nation-state, to ameliorate

5 At https://ccpi.org/.

national standards, not the world's.[6] This is why we decided to use the expression "reflexive green nationalism" and apply it to the form of national ideology that these nation-states developed, and that future nation-states might be inspired by.

What is reflexive green nationalism and how do we trigger it?

With Reflexive Green Nationalism (RGN) we mean an ideology shared by large segments of a nation-state that make civil and political society increasingly self-critical of modernization efforts that disrupt the environment, endangering human and non-human life. RGN drifts away from Resource Nationalism (RN), the most common form of nationalism we discussed earlier in this paper, mostly a self-idolizing and uncritical form of nationalism entrenched in old models of modernization that disregard short and long term consequences on the national environment. Unlike RN, RGN is a form of nationalism that accepts and encourages critique and reflection on the risks that national modernization projects create, and facilitates the search for solutions.

The above-mentioned studies on nation-states that developed RGN showed that the candidates for the subject of the critique of society, key elements triggering reflexivity and thus re-modernization, are many and always at work. They include civil society, the critical elites, traditional and social media, influencers, environmental NGOs, subcultures, indigenous minorities, the public sphere, youth (e.g, Greta Thunberg's Fridays for Future), and even "self-organizing psychopaths and counter-experts" (Beck, 2008, p. 81). Movements that initially appeared innocuous such as Greta Thunberg's, who began by skipping school on Fridays to protest against governmental immobility vis-à-vis the climate crisis, can end up mobilizing millions around the world, triggering self-criticism and potentially even green transitions. As the environmental turn occurred during the 1960's—70's proves, under the right conditions, these factors can generate real change in governmental action, potentially leading to RGN and a Green Nation-State in as little as a decade (Conversi and Posocco, 2022). It is true that since the 1970's the world has been through some big transformations, but this does not mean that the present presents less possibilities to trigger a green revolution than there were fifty or 60 years ago.

Institutions especially, such as environmental NGOs and the media that supported the first environmental turn, have been deeply transformed. Moreover, while the surprise effect generated by the first wave of protests didn't give polluters much time to reorganize themselves and react, things are radically different today. There is a fierce resistance facilitated by decades of experience on the parts of those who have strong interests in keeping the status quo i.e., wealthy oil corporations can fund their own research and lobby governments with the aim of denying the climate crisis and fuelling alarmism that if we put a halt to fossil fuels the world would plunge into economic chaos (Chomsky and Pollin, 2020). A recent speech by Australia's PM Anthony Albanese seems to support this claim: "banning fossil fuel exports and new coal and gas mines to try and reduce climate emissions won't stop global warming but would devastate the Australian economy" (The Sydney Morning Herald, 2022).

Australia's PM is arguably not alone in the global political scenario. As Kraft (2001) put it when investigating the case of the US, "Politics increasingly bows to the requirements of economics that demands to "justify environmental policy actions through analysis of economic impacts and through provision of strong scientific analysis such as quantitative risk assessments"" (Kraft, 2001, p. 145). The message has been successfully conveyed worldwide that solving the climate crisis is an extremely difficult task that requires professional figures, biologists, physicists, and economists, to name a few, in organized committees that have the role to suggest good strategies to Nation-States' governments. People are left out of the game. One of the problematic results is that environmental organizations adapted and moved the environmental struggle from the street to the corridors of politics where lobbying is carried out, and the labs of universities and research centers, where environmental studies take shape that lobbies can use to influence governments.

In this scenario, environmental NGOs, whose main role was, not long ago, to act on behalf of and with the people (Edwards, 2020), have politicized and "hyperprofessionalised" (Diani and Donati, 1999). The US is a good example of such a development (Kraft, 2001), but the same happened in Europe (Diani and Donati, 1999). Since the 1980's, slowly but resolutely, many environmental NGOs in the US stopped mobilizing people, organized fewer public protests while using more and more resources to establish roots in Washington DC and lobby governments (Kenner and Heede, 2021). The same is true in the hearth of Europe:

> The sudden change in political opportunities available to German environmentalists in the early 1990's [...] has indeed exposed the limitations of hyperprofessional groups when their central concerns are not as high on the public agenda as they used to be, their insider status is diminished, and they badly need grass-roots mobilization again. Under deteriorating political conditions, highly professional environmental lobbies might well prove unable to revert to that good, old weapon of excluded interests–contentious protest (Diani and Donati, 1999, p. 30).

It certainly does not mean that environmental organizations did nothing. Even a superficial look at China and Russia, two

6 Norway is a good example of environmentalism directed mostly inwards towards the nation. It is a country that uses almost 100% of renewable energy for domestic needs, but exports massive quantities of oil to other nation-states.

countries where environmental NGOs are perpetually checked by two of the most powerful authoritarian regimes in the world, shows what the alternative could be. And yet, it would be wrong not to see in the professionalization and politicization of environmental NGOs as a lost opportunity to do better.

Beside badly harming grassroots movements, the politicization of NGOs greatly facilitated the politicization of the climate crisis, which in turn, contributed to an oscillation in terms of environmental policy that strongly undermined the development of reflexive green nationalism. The mechanism is as follows: when a party that seeks to resolve the climate crisis is in power, steps are taken toward that goal and policy is enacted, when climate skeptics or climate deniers rule, they either undo what the previous government did (Donald Trump's government is an example of such a strategy) or do nothing to improve it. This is a process that Cullenward and Victor (2021) recently highlighted, and greatly harms the environment because, unlike elections, the natural world does not work on a 3–4 year basis. To be successful and, say, regenerate devastated and unproductive soil or regrow a forest, environmental policy needs stability in the long run. The same is true for greening the many sectors that emit the most carbon dioxide and other greenhouse gases. This is particularly clear when comparing CO2 emissions in the US and Germany. As Figures 6, 7 (below) show, the curve of emissions in the former goes up and down while the latter is stable and decreases, slowly but resolutely. The "secret" of Germany is that unlike the US, the time of reflexivity didn't stop in the 1970's. It continued well beyond the 1980's until present and spread environmentalism throughout all levels of German society. It gave birth to what we call reflexive green nationalism. If, in the US, the government of Ronald Reagan backtracked, in Germany, the government of Helmut Kohl kept enacting important climate policies, established the Ministry of Environment, Nature Conservation, and Nuclear Safety, and the subcommittee the Enquête Commission on Preventive Measures to Protect the Earth's Atmosphere (Climate Enquête Commission) (Watanabe and Lutz, 2003). The result of the Climate Enquête Commission was instrumental in terms of climate change policies in the future. It set long term goals for emissions reductions, promotion of renewable energy, energy efficiency standards, market-based approaches to climate change, and voluntary agreements with industry that still bear fruit in the present.

A solution to the stagnation of politics and the oscillation of climate policy comes from environmental movements going back to do what they know better: raise awareness of the disastrous effects of climate change, trigger participation and bottom-up mobilization, let people do the work of politics, help them to take to the streets and demonstrate, push politicians to implement climate policy, and control that environmental policy is effectively enforced and functioning. In addition, they should use their networking and symbolic power to echo the work of the scientific community that does not use science for profit but for science's sake. In doing so, they would help correct one of the biggest problems hindering re-modernization, "bad thinking epidemic" (Levy, 2021) that we discussed in the earlier section of this paper, and help people to distinguish between reliable and unreliable sources of information. This is crucial insofar as a populace more sensitive to the cause of environmentalism and more critical makes its voice heard and forces politicians, regardless of their political affiliation, to act when they stand still.

This is a key point. Infuse institutions with values-based energy and direction, and political settlements that legitimize and sustain these values and directions in the polity. Civil society, especially environmental organizations as actors devoted to provide solutions to the climate crisis, should work to depoliticise climate change, not in the sense of pushing climate change out of politics, but to push the idea that, for example, the immediate and drastic cut of CO2 emissions shouldn't be subject of political debate anymore but needs steps that politics must take beyond party flags. Cullenward and Victor (2021) argued that successful climate policy requires building political coalitions to support transforming all the major emitting sectors of the economy, from electric power to transportation. And yet, vis-à-vis the enormous and multifaceted interests in the energy sector, as the case of the US proves, building such coalitions seem to be a gargantuan endeavor. In addition, political coalitions don't guarantee stability in the long run and give birth to oscillation leading to circles of progress and setbacks harming the environment. For the sake of clarity, the goal is not to eradicate political debates or diminish their importance while pushing for green solutions. This would share problematic similarities with eco-fascist developments in the 1920's and 1930's. The goal is to build a deeper environmental consciousness at the large national level, hence the need to tie nationalism and environmentalism. This defined the ideological linkage as Reflexive Green Nationalism, an ideology shared by large sectors of society, including political and economic elites. This would decrease said oscillation and favor green transitions. For this to happen, environmentalism must lock in. The study of green nation-states supports this hypothesis (Conversi and Posocco, 2022; Posocco and Watson, 2022). The lock in of environmentalism, and its entrenchment within the large and deeply rooted nationalist ideology would avoid the climate crisis remaining entangled in petty political debates, coalition games, and political interest.

It is true, the tasks this study envisages for environmental organizations are extremely difficult, and yet their work is arguably much easier today than fifty or so years ago, when they were fundamental in triggering protests that led to the environmental turn. This is also valid in China and Russia, which although remain strongly centralized authoritarian systems, have seen the development (in 1990's Russia one could use the term "flourishing") of environmental NGOs in ways that were unthinkable fifty years ago. In addition, unlike fifty years ago, both societies are much more open to external influences,

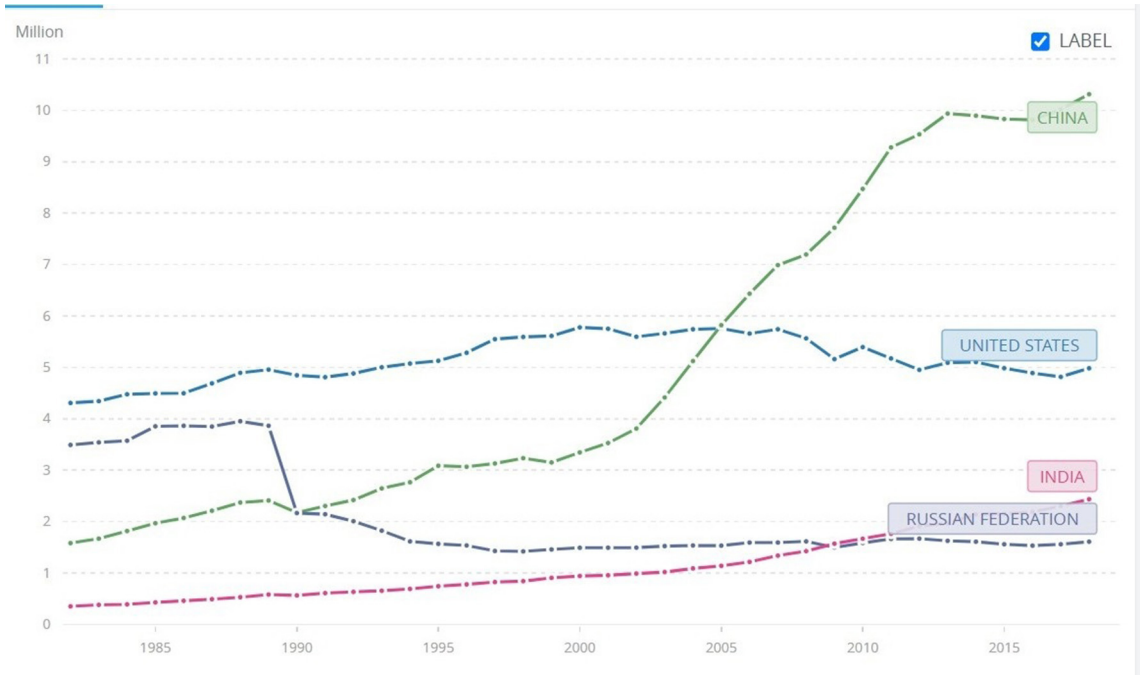

FIGURE 6
Top-polluting nation-states. CO2 emissions since the 1980's. Source: World Bank. At https://data.worldbank.org/indicator/EN.ATM.CO2E.KT?locations=RU-CN-US (accessed February 26, 2022).

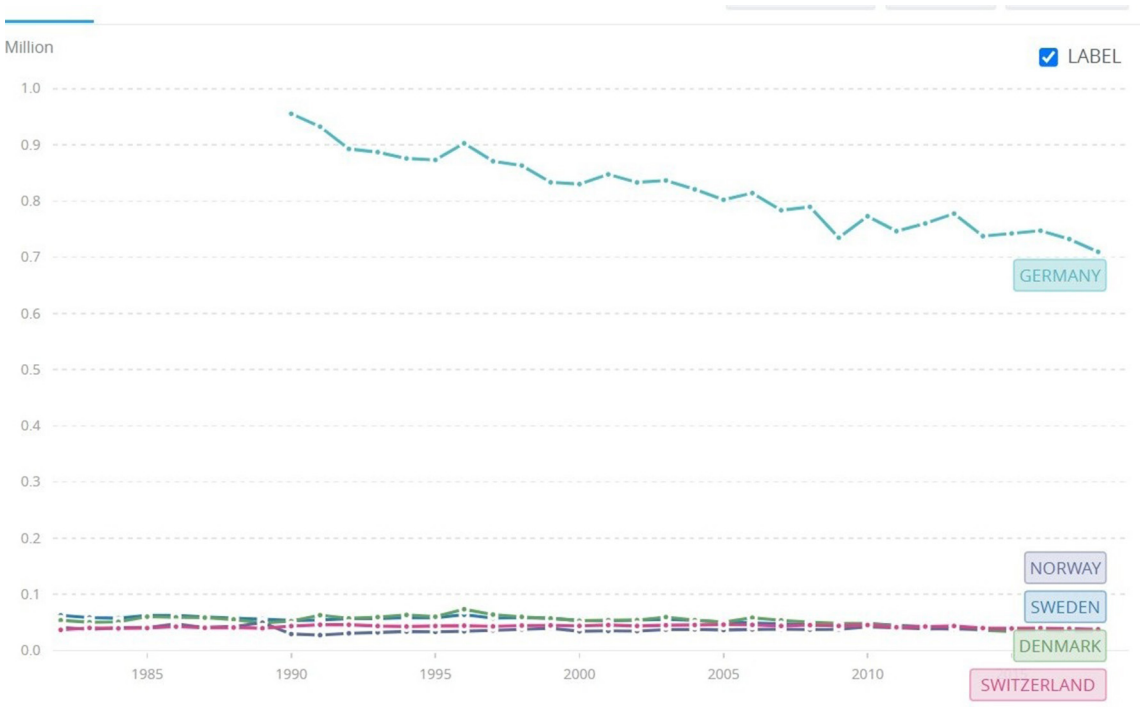

FIGURE 7
Exemplary nation-states. CO2 emissions since the 1980s. Source: World Bank. At https://data.worldbank.org/indicator/EN.ATM.CO2E.KT?locations=RU-CN-US (accessed February 26, 2022).

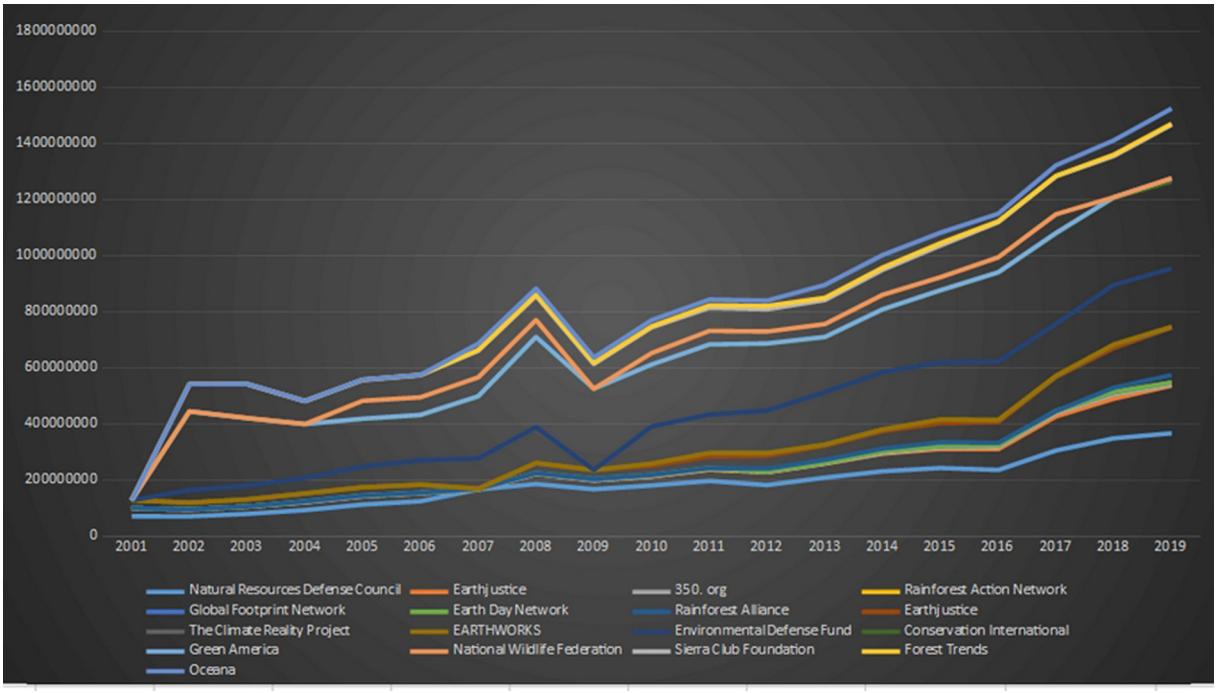

FIGURE 8
Growth chart of 17 important environmental NGOs (2001–2019).

including the global market bringing new trends. This plays a decisive role in making them extremely more malleable, as it is clear in China, a country that is already the leading power in green technology, and some argue, also at a turning point in terms of green transition (Heggelund, 2021).

Figures 8–12 below show the growth charts of twenty among the biggest environmental organizations around the world, including the World Wildlife Fund (WWF), the Sierra Club Foundation, the Environmental Defense Fund, Rainforest Alliance, and the Nature Conservancy. The graphs show that their total net assets (freely accessible on the websites of these organizations) grew linearly through the last 20 years, and that these institutions are richer, more powerful and potentially more influential than ever.

Environmental NGOs should take advantage of their growing power. As mentioned above, they should implement strategies to depoliticise climate change rather than contributing to its politicization, and should mobilize people and push them to demand the resolution of climate change beyond party flags. This kind of mobilization would provide a strong basis to the development of RGN insofar as citizens that think critically are, as Giddens (1994) put it, "reflexive citizens." Eventually, as happened in countries such as Germany, which hosts the strongest green party of Europe (BÜNDNIS 90/DIE GRÜNEN), politicians' agendas will adapt to secure those votes. Top-down and bottom-up environmental forces working in concert would give birth, as in Germany, to a virtuous circle that characterizes green nation-states: a synergy between different parts united in making the national society a greener society.

Conclusion

This article looked at climate change from a novel perspective, the one of nation-state and nationalism. Drawing on theories of nationalism bridged with the theory of reflexive modernity, it explained climate change not as a global problem but as a national one, lying with a few top polluters: nation-states that are incapable of (1) critically reflecting on the problems they create, (2) searching for solutions, and (3) applying them to avoid a global warming that triggers a global catastrophe.

This is a key change in the way we think about the causes of and the available strategies for solving climate change. It suggests an original point of view when considering the larger body of scholarship that emphasize global action. Indeed, this article puts forward the notion that, to resolve the climate crisis, we don't need to change the way humanity thinks about the accelerating pace of energy use, carbon emissions, and fossil fuels. Instead, we need to make sure that top-polluters do. This is true vis-à-vis the overwhelming evidence brought by the 2022 IPCC report that we have no more time. We cannot

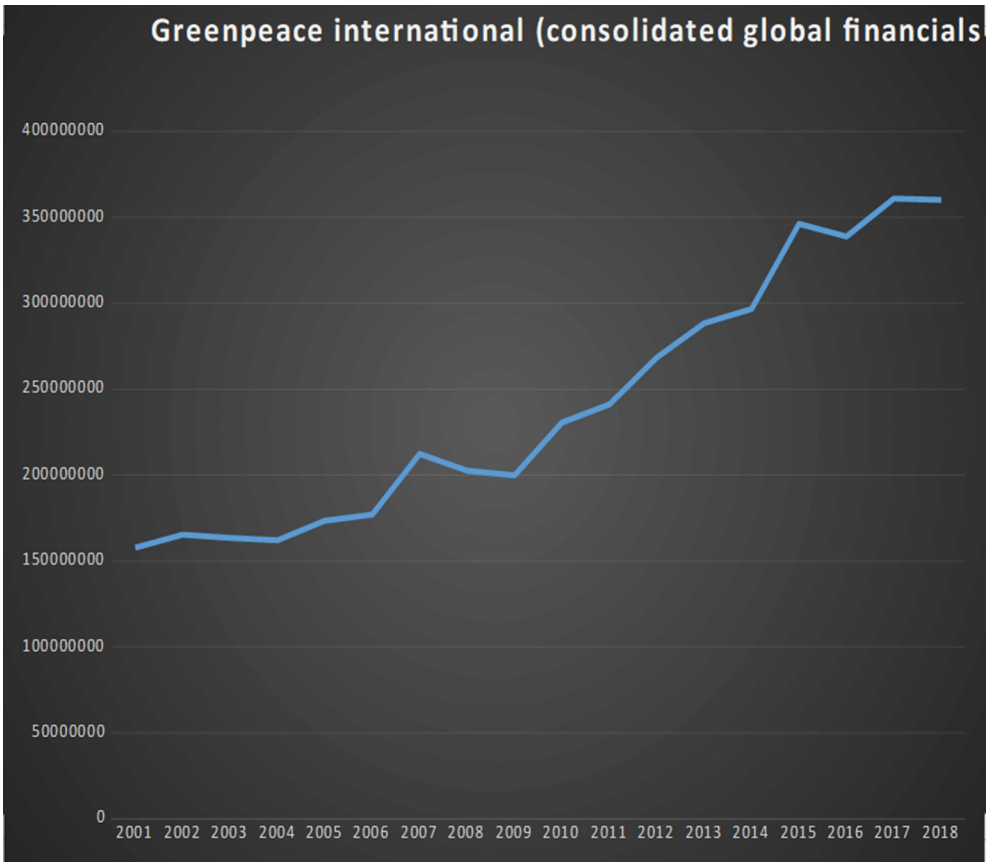

FIGURE 9
Greenpeace international. Consolidate global financials in dollars. Data source: Greenpeace annual reports. Both are freely accessible from the organisation's websites.

keep making Pindaric flights theorizing idyllic cosmopolitan or terrestrial futures where all people live harmoniously and face the climate crisis together, coordinated and cooperative. This will not happen within the time frame we are given, and if we don't solve the climate crisis within this time frame, there might be no humanity to build a more "human" world. This is particularly true vis-à-vis Kemp et al.'s study on catastrophic climate change scenarios (Kemp et al., 2022).

Strategies to turn top polluters into green nation-states in the time given by the 2022 IPCC report are need. This article conceptualized "Reflexive Green Nationalism" (RGN) as a potential answer, a national ideology that turns away from uncritical and celebratory forms of nationalism and makes critique of unsustainable national modernization efforts, reflexivity, and search for solutions its founding elements. The conviction of targeting national ideology first came from (1) nationalism studies bringing evidence of the dominance of nationalism and the nation-state in the international political arena, and (2) a recent body of literature on existing green nation-states suggesting that changing the ideas driving a nation to act in and interact with the environment, making citizens more reflexive, critical and ready to mobilize for their national environment, is a fundamental precondition for sustainability. In this perspective, RGN framework and strategies are both pragmatic and normative/ideological. RGN acknowledges both limits and potentials of nationalism, as many others did (Fukuyama, 1992; Gans, 2003; Harari, 2019; Mandelbaum, 2019; Tamir, 2019), and builds on them. Among these elements, also controversial factors such as national emotions, national identity, a sense of belonging to the nation and national pride, factors that are inextricably linked to national homogenization. While the latter is, as Mandelbaum (2019) rightly put it, a "fantasy" of the state giving birth to numerous tensions in multi-ethnic nation-states worldwide, in the context of climate change they become potentially positive and powerful triggers mobilizing the masses. In the end, it is true that the thought of our world "on fire" can be a strong motivation to act, but it is difficult to object that an even stronger motivation comes from knowing that our own house will burn if we don't extinguish the blaze.

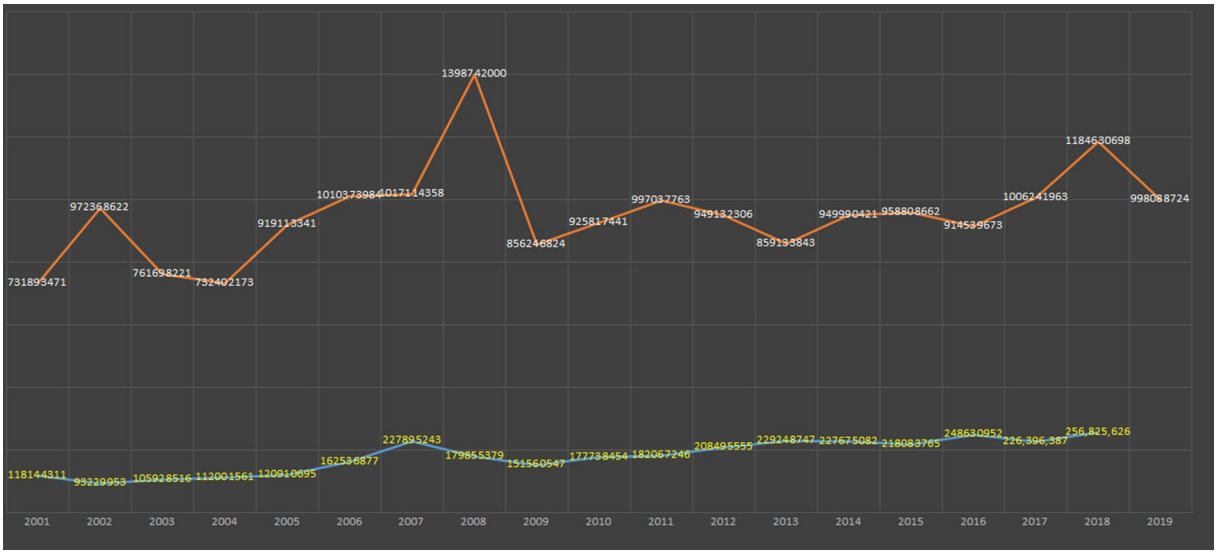

FIGURE 10
Growth chart of WWF (blue line) and Nature Conservancy (orange line) (2001–2018). Data source: WWF and the Nature Conservancy annual reports. Both are freely accessible from these organisations' websites.

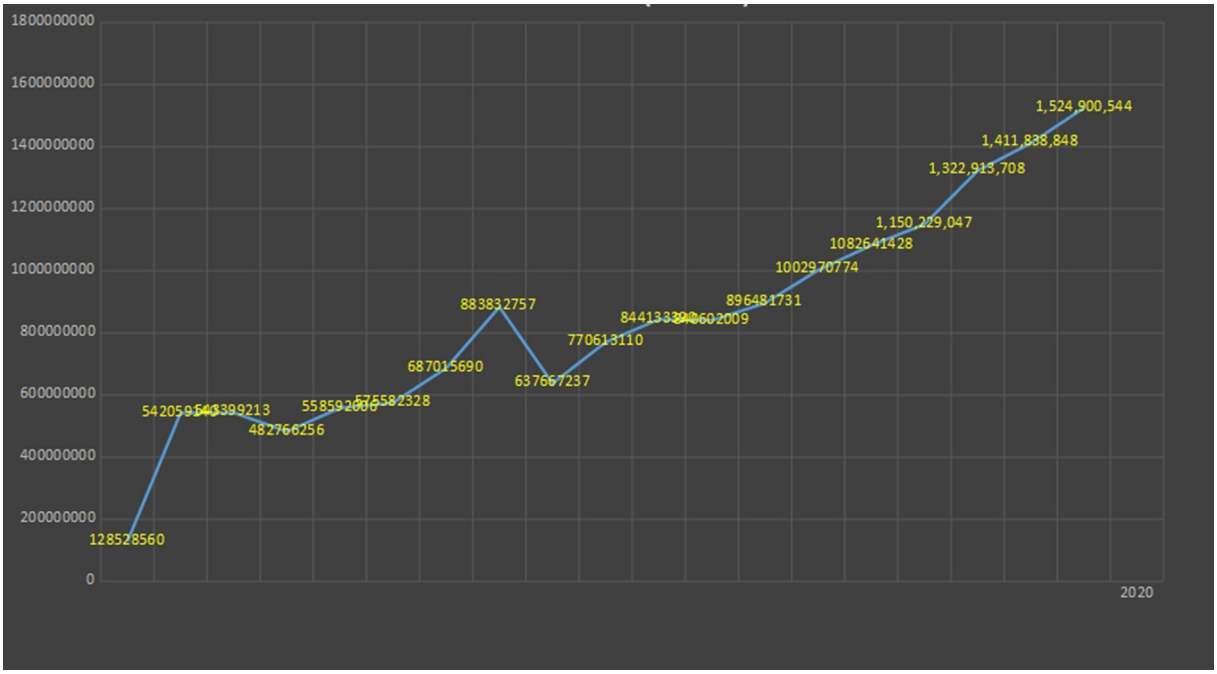

FIGURE 11
Total net assets of environmental NGOs listed in Figures 8, 9. Year. 2000–2020.

This article identified civil society, in particular environmental NGOs, as the key actors with the potential to lead to a change in ideology at the large national level. While we acknowledge previous studies highlighting the shortcomings from such organizations, especially the phenomenon of politicization of environmental organizations (a potential

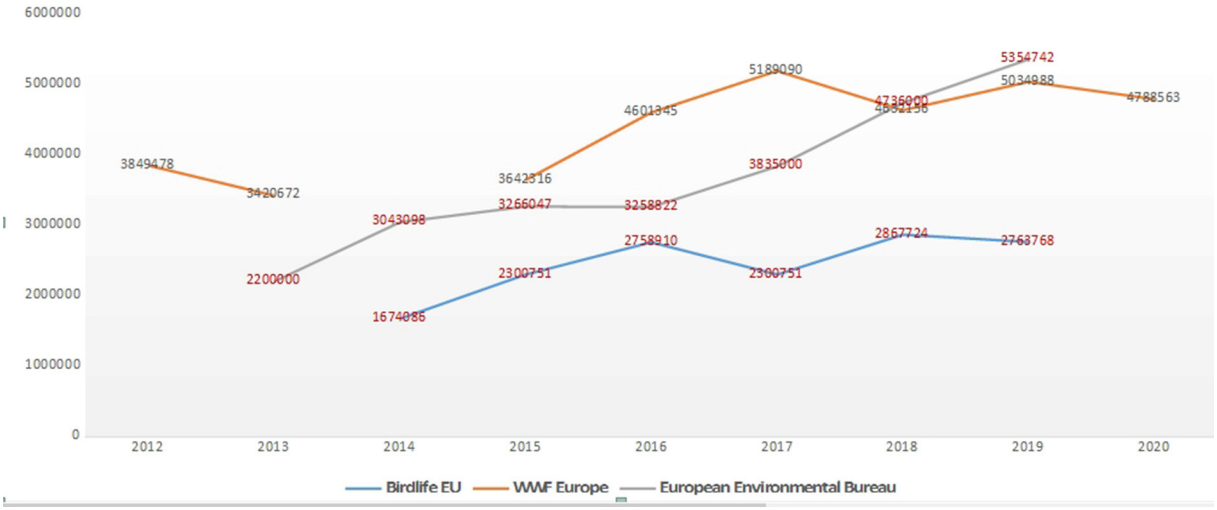

FIGURE 12
Three Environmental NGOs in Europe. Growth charts. Data source: Birdlife, WWF Europe and European Environmental Bureau annual reports. Freely accessible from these organisations' websites.

double-edged sword), a comparative look at green nation-states (both in the past and present) shows that these organizations play a key role in creating a healthy epistemic environment, mobilizing masses, letting them do the work of politics, pushing governments to enact climate policy and establishing committees to make sure they are successfully enforced. These are all fundamental factors contributing to the development of green nation-states.

It is also true that environmental organizations are not the only ones playing a role in ideological change. Media and critical elites play similarly important roles. Unfortunately, given the limited space at our disposal, we had to narrow down our focus. We reserve this analysis to a future dedicated article.

This article ends with a discussion on the necessary conditions for developing successful environmental movements considering the problems that these organizations face in the 21st century, especially their politicization within top polluters such as the US, Russia, and China.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

LP conceived the idea, developed the theory, and wrote the manuscript. IW contributed to the main conceptual ideas, the design of the project, and the writing of the manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

Althusser, L. (2001). *Lenin and Philosophy and Other Essays, Translated by B. Brewster*. New York, NY: Monthly Review Press.

Amnesty International (2022). *Indigenous Peoples*. Available online at: https://www.amnesty.org/en/what-we-do/indigenous-peoples/ (accessed June 5, 2022).

BBC (2015). *Volkswagen: The Scandal Explained*. Available online at: https://www.bbc.com/news/business-34324772 (accessed August 7, 2022).

Beck, U. (1986). *Risk Society [Risikogesellschaft, German title]*. Frankfurt: Suhrkamp.

Beck, U. (1999). *World Risk Society*. Cambridge: Polity Press.

Beck, U. (2002). The cosmopolitan society and its enemies. *Theory Cult. Soc.* 19, 17—44. doi: 10.1177/026327640201900101

Beck, U. (2008). *World Risk Society*. Cambridge: Polity Press.

Beck, U. (2009). Critical theory of world risk society: a cosmopolitan vision. *Constellations* 16, 1–22. doi: 10.1111/j.1467-8675.2009.00534.x

Beck, U. (2016). *The Metamorphosis of the World*. Cambridge: Polity.

Beck, U., Giddens, A., and Lash, S. (1994). *Reflexive Modernization*. Stanford: Stanford University Press.

Billig, M. (1995). *Banal Nationalism*. London: Sage.

Brubaker, R. (2015). *Grounds for Difference*. Cambridge: Harvard University Press. doi: 10.4159/9780674425293

Brulle, R. J. (2020). "Denialism: organized opposition to climate change action in the United States," in *Handbook of Environmental Policy*, eds David, K. Northampton, MA: Edward Elgar Publishing, 328–341.

CCPI (2022). *Climate Change Performance Index*. Available online at: https://ccpi.org/ (accessed October 2, 2022).

Chomsky, N., and Pollin, R. (2020). *Climate Crisis and the Global Green New Deal: The Political Economy of Saving the Planet*. London: Verso.

Conversi, D. (2020). The ultimate challenge: nationalism and climate change. *Natl. Pap.* 48, 625–636. doi: 10.1017/nps.2020.18

Conversi, D. (2021). Exemplary ethical communities. A new concept for a livable Anthropocene. *Sustainability*, 13, 1–17. doi: 10.3390/su13105582

Conversi, D., and Friis Hau, M. (2021). Green nationalism. Climate action and environmentalism in left nationalist parties. *Env. Polit.* 30, 1089–1110. doi: 10.1080/09644016.2021.1907096

Conversi, D., and Posocco, L. (2022). Which nationalism for the anthropocene? A comparative study of exemplary green nation-states. *Front. Polit. Sci.* 4, 1–16. doi: 10.3389/fpos.2022.857597

Cullenward, D., and Victor, D. G. (2021). *Making Climate Policy Work*. Cambridge: Polity Press.

DI. (2021). *Democracy Index*. Available online at: https://www.eiu.com/n/campaigns/democracy-index-2020/ (access August 10, 2022).

Diani, M., and Donati, P. R. (1999). Organisational change in Western European Environmental Groups: a framework for analysis. *Env. Polit.* 8, 13–34. doi: 10.1080/09644019908414436

Dryzek, J. S., Hunold, C., Schlosberg, D., Downes, D., and Hernes, H. K. (2002). Environmental transformation of the state: the USA, Norway, Germany and the UK. *Polit. Stud.* 50, 659–682. doi: 10.1111/1467-9248.00001

Duara, P. (2021). The Ernest Gellner Nationalism Lecture: Nationalism and the crises of global modernity. *Nations Natl.* 27, 610–622. doi: 10.1111/nana.12753

Eriksen, T. H. (2021). The loss of diversity in the anthropocene biological and cultural dimensions. *Front. Polit. Sci.* 3:743610. doi: 10.3389/fpos.2021.743610

Feindt, P. H., and Newig, J. (2005). *Partizipation, Öffentlichkeitsbeteiligung, Nachhaltigkeit*. Perspektiven der politischen Ökonomie. Marburg: Metropolis.

Feindt, P. H., and Weiland, S. (2018). Reflexive governance: exploring the concept and assessing its critical potential for sustainable development. Introduction to the special issue. *J. Environ. Policy Plan.* 20, 661–674. doi: 10.1080/1523908X.2018.1532562

Fox, J. (2008). Banal nationalism in everyday life. *Nations Natl.* 24, 862–866. doi: 10.1111/nana.12458

Fox, J., and Miller-Idriss, C. (2008). Everyday nationhood. *Ethnicities* 8, 536–563. doi: 10.1177/1468796808088925

Fukuyama, F. (1992). Comments on nationalism and democracy. *J. Democr.* 3, 23–28. doi: 10.1353/jod.1992.0054

Gans, C. (2003). *The Limits of Nationalism*. Cambridge: Cambridge University Press.

Gelter, H. (2000). Friluftsliv: The Scandinavian philosophy of outdoor life. *Can. J. Environ. Educ.* 5, 77–92. Available online at: https://cjee.lakeheadu.ca/article/view/302/803 (accessed October 2, 2022).

Giddens, A. (1991). *Modernity and Self-identity: Self and Society in the Late Modern Age*. Cambridge: Polity press.

Giddens, A. (1994). Living in a post-traditional society, in *Reflexive Modernisation: Politics, Tradition, and Aesthetics in the Modern Social Order*, eds Beck, U., Giddens, A., and Lash, S. Cambridge:Polity Press.

Giddens, A., and Pierson, C. (1998). *Conversations with Anthony Giddens: Making Sense of Modernity*. Cambridge: Polity Press.

Gilens, M., and Page, B. (2014). Testing theories of American politics: elites, interest groups, and average citizens. *Perspect. Polit.* 12, 564–581. doi: 10.1017/S1537592714001595

Global Climate Risk Index (2021). *Global Climate Risk Index 2021*. Available online at: https://www.germanwatch.org/en/cri (accessed October 2, 2022).

Goldin, I. (2013). *Divided Nations: Why Global Governance is Failing, and What We Can do about it*. Oxford: Open University Press,.

Harari, Y. N. (2019). *The Bright Side of Nationalism*. Presidential lecture series. Central European University. Available online at: https://www.ceu.edu/article/2019-05-17/yuval-noah-harari-discusses-bright-side-nationalism (accessed June 21, 2021).

Harvard Center for Climate, Health, and the Global Environment (2021). *Coronavirus, Climate Change, and the Environment. A Conversation on COVID-19 with Dr. Aaron Bernstein, Director of Harvard Chan C-CHANGE*. Available online at: https://www.hsph.harvard.edu/c-change/subtopics/coronavirus-and-climate-change/ (access May 11, 2022)

Heggelund, G. M. (2021). China's climate and energy policy: at a turning point?. *Int. Environ Agreements*, 21, 9–23. doi: 10.1007/s10784-021-09528-5

Held, D. (1995). *Democracy and the Global Order: From the Modern State to Cosmopolitan Governance*. Stanford: Stanford University Press.

IPCC (2022). *Intergovernmental Panel for Climate Change, 2022 Report*. Available online at: https://www.ipcc.ch/report/ar6/wg2/ (accessed August 7, 2022).

Jordan, A., Wurzel, R. K. W., and Zito, A. R. (2003). *New Instruments of Environmental Governance? National Experiences and Prospects*. Routledge, London and New York.

Kemp, L., Xu, C., Depledge, J., Ebi, K. L., Gibbins, G., Kohler, T. A., et al. (2022). *Climate Endgame: Exploring catastrophic climate change scenarios. Earth Atmos. Planet. Sci.* 119, 1–9. doi: 10.1073/pnas.2108146119

Kenner, D., and Heede, R. (2021). White knights, or horsemen of the apocalypse? Prospects for Big Oil to align emissions with a 1.5 °C pathway. *Energy Res. Soc. Sci.* 79, 102049. doi: 10.1016/j.erss.2021.102049

Klein, N. (2020). *On Fire: The (Burning) Case for a Green New Deal*. New York: Simon and Schuster.

Kraft, M. E. (2001). *National Academies of Sciences, Engineering, and Medicine*. The Role of Environmental NGOs: Russian Challenges, American Lessons. Proceedings of a Workshop. Washington, DC: The National Academies Press.

Lassen, I., Horsbøl, A., Bonnen, K., and Julius Pedersen, A. G. (2011). Climate change discourses and citizen participation: a case study of the discursive construction of citizenship in two public events. *Environ. Commun.* 5:4, 411–427. doi: 10.1080/17524032.2011.610809

Latour, B. (2018). *Down to Earth: Politics in the New Climatic Regime*. Cambridge: Polity Press.

Lenschow, A. (2002). *Environmental Policy Integration*. Greening sectoral policies in Europe. London: Earthscan.

Levy, N. (2021). *Bad Beliefs*. Why They Happen to Good People. Oxford: Oxford University Press.

Malesevic, S. (2019). *Grounded Nationalisms: A Sociological Analysis*. Cambridge: Cambridge University Press.

Mandelbaum, M. (2019). *The Nation/State Fantasy: A Psychoanalytical Genealogy of Nationalism*. New York, NY: Springer International Publishing.

McNeill, J. (2016). *The Great Acceleration. An Environmental History of the Anthropocene Since 1945*. Cambridge: Harvard University Press.

Mearsheimer, J. (2001). *The Tragedy of Great Power Politics*. New York, NY: W.W. Norton.

O'Connor, C., and Weatheral, J. (2019). *The Misinformation Age*. How False Beliefs Spread. New Haven: Yale University Press.

Posocco, L. (2022). *Museums and Nationalism in Croatia, Hungary and Turkey*. London and New York: Routledge.

Posocco, L., and Watson, I. (2022). Nationalism and environmentalism: The case of Vauban. *Nations Natl.* 28, 1193–1211. doi: 10.1111/nana.12823

Rome, A. (2010). *The Genius of Earth Day. Environ. Hist.* 15, 194–205. doi: 10.1093/envhis/emq036

Skey, M. (2009). The National in Everyday Life: A Critical Engagement with Michael Billig's Thesis of Banal Nationalism. *Sociol. Rev.* 57, 331–346. doi: 10.1111/j.1467-954X.2009.01832.x

Tamir, Y. (2019). *Why Nationalism*. Princeton, NJ: Princeton University Press.

The Global Wealth Report (2021). *The Global wealth report* 2021. Available online at: https://www.credit-suisse.com/about-us/en/reports-research/global-wealth-report.html (accessed August 10, 2022).

The Guardian (2022). The other Joe: how Manchin destroys Biden's plans, angering Democrats. Available online at: https://www.theguardian.com/us-news/2022/jul/16/joe-manchin-biden-climate-senate (accessed August 7, 2022).

The Sydney Morning Herald (2022). Devastating impact: PM rejects Greens call to halt fossil fuel exports. Available online at: https://www.smh.com.au/politics/federal/devastating-impact-pm-rejects-greens-call-to-halt-fossil-fuel-exports-20220726-p5b4v3.html?utm_medium=Socialandutm_source=Twitter#Echobox=1658835474 (accessed August 7, 2022).

Uekötter, F. (2014) *The Greenest Nation?: A New History of German Environmentalism*. Cambridge: MIT Press.

Waltz, K. (1979). *Theory of International Politics.* Reading, MA: Addison-Wesley.

Watanabe, R., and Lutz, M. (2003). The development of climate change policy in Germany. *Int. Rev. Environ. Strateg.* 5, 109—125.

World Bank (2022). *CO2 Emissions (kt) - Heavily Indebted Poor Countries (HIPC).* Available online at: https://data.worldbank.org/indicator/EN.ATM.CO2E.KT?locations=XE (accessed October 2, 2022).

Yudkowsky, E. (2008). "Artificial Intelligence as a positive and negative factor in global risk," in *Global Catastrophic Risks*, eds Bostrom, N., and Cirkovic, M. M. Oxford: Oxford University Press, 308–343.

Zizek, S. (1989). *The Sublime Object of Ideology*. London; New York, NY: Verso.

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Limits to the Anthropocene: geopolitical conflict or cooperative governance?

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In the Anthropocene the world is facing an acceleration of human growth and its impact on nature. The expansionist world order which emerged from Europe since colonial times is reaching multiple limits (environmental, economic, social, political and scientific-technical), increasing marginal costs and risks which trigger multiple crises, conflicts and catastrophes that challenge this world order. Alternative futures range from a collapse of human civilization to geopolitical power competition and conflict between rivals to disruptive technical innovations and systemic transformation of the economy and society within natural boundaries. In response to geopolitical conflicts and their consequences, such as climate change and the Russia-Ukraine war, efforts of cooperative governance can help to mitigate, adapt to and manage complex crisis landscapes. Instead of an epochal turn (*Zeitenwende*) for arms race and war, more promising are sustainable climate protection and a peaceful energy transition within planetary boundaries. To further prevent escalating and mutually enforcing crisis dynamics and geopolitical conflicts in the Anthropocene, cooperative governance needs to adjust to the world's complexity and move from a negative nexus of problems to a positive nexus of solutions. The interaction between geopolitics and governance and the transition from risk cascades to synergies is discussed for the energy-security nexus and the climate-conflict-migration nexus. Energy conflicts can be contained by diminishing land competition and biodiversity loss, as well as risky dependencies on strategic raw materials and conflict minerals. Measures for a sustainable energy transition include energy efficiency and conservation, renewable energy and decarbonization, a circular economy and nature-based solutions. To prevent risk multiplication in the climate-conflict-migration nexus, synergies in climate, migration and security policy facilitate integrative solutions for a socio-ecological transformation based on mitigation and adaptation, conflict resolution and environmental peacebuilding, aiming for a mutual enforcement of sustainability and peace.

KEYWORDS

limits to the Anthropocene, geopolitical conflict, cooperative governance, energy security, climate-conflict-migration nexus, Russia-Ukraine war, risk cascade, sustainable peace

1. Introduction

In this review article, I explore how the ongoing, seemingly unstoppable, expansionist growth and development model is reaching several limits leading to multiple crises and geopolitical conflicts, and how their possible escalating interactions could be contained by cooperative governance. Within this framework, the interplay between geopolitics and governance is exemplified by two relevant cases: (1) the energy-security nexus; and (2) the climate-conflict-migration nexus.

Since the agricultural and industrial revolutions, humanity has shaped the face of the Earth to such an extent that today's geological age has been called "Anthropocene" (Crutzen and Stoermer, 2000). We are experiencing a "Great Acceleration" (Eriksen, 2016; McNeill and Engelke, 2016) of the expansive development model emanating from European colonial powers based on the exploitation of human and natural resources which is reaching planetary boundaries. These include not only ecological limits to growth, but also economic, social, political and scientific-technical limits which result in growing marginal costs and risks for the current world order, leading to resistance and instability, multiple crises, catastrophes and conflicts (Scheffran, 2022a, 2023). The challenge is to sustainably embed human development into an ever-more "full world" of the Anthropocene within the natural environment (von Weizsäcker and Wijkman, 2018; Dixson-Declève et al., 2022).

The year 2022 marked the 50th anniversary of the 1972 report to the Club of Rome, "The Limits to Growth," which used simple computer models to simulate the future consequences of humanity's growth. In some scenarios, there was a collapse of natural resources, the world economy and the world population; in others, this could be avoided by limiting growth and finding solutions for environmental protection and more efficient use of resources (Meadows et al., 1972).

Fifteen years later, in 1987 the World Commission on Environment and Development (WCED) defined principles of sustainable development. After the end of the Cold War many hoped for a peace dividend that would also benefit environmental protection. At the Rio Conference on Environment and Development in June 1992, agreements were reached to protect the planet's climate and biodiversity, combat desertification, and present guidelines for sustainable development in the Agenda 21. At that time, the issues of war and peace were not included as expected by the UN Department for Disarmament Affairs, which had prepared a report for Rio on the reallocation of military resources for environmental protection (UN, 1991; Scheffran, 1992). Nevertheless, a series of conferences on conversion of the military was set in motion in Dortmund, Moscow and Hong Kong.

How growth limits might look like was not yet foreseeable in 1972; neither climate change nor violent conflicts appeared in the models. For both, the year 2022 provided illustrative examples. In spring 2022, the Intergovernmental Panel on Climate Change (IPCC) with the second and third parts of its sixth assessment report showed how dramatic the consequences of climate change can become and what can be done about it. The report left no doubt about the consequences of uncontrolled heating of our planet: "Climate change impacts and risks are becoming increasingly complex and more difficult to manage. Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions. Some responses to climate change result in new impacts and risks (*high confidence*)." (IPCC, 2022a).

In this dire situation for the future of planet earth, on February 24, 2022 the world was confronted with a violent geopolitical conflict involving major powers, shifting the coordinates of the international system toward open confrontation. Russia's attack on Ukraine attracted enormous resources and political attention that since then were unavailable for cooperative solutions to climate change and other global problems within the planetary boundaries. The presentation of the IPCC report was almost drowned out by the sounds of war, pushing aside the movement to prevent the climate emergency and humanity's other existential threats. Since then the world is facing competing choices between geopolitical conflict and cooperative governance.

This war had significant impacts on European politics, in particular the German red-green-liberal government, which started 2021 with the primary goal of climate policy and then was subjected to the primacy of war. On February 27, Chancellor Olaf Scholz switched into crisis mode and in his speech to the Federal Parliament declared his response to the "*Zeitenwende*" (epochal turn) induced by Russia's attack, providing 100 billion Euros in special funds for the German Armed Forces (Scholz, 2023).

Alternative futures range from a collapse of human civilization and system-immanent solutions to technical innovations and a deep transformation of the economy and society within the framework of nature. Multiple crises, from armed conflicts and economic challenges to climate change and the COVID-19 pandemic, as well as the reactive crisis mode of politics, undermine the foundations for preventive problem-avoidance, guiding expansive human development into regulated channels. The available environmental space of natural resources available to a country without threatening sustainability should guarantee a decent life for all inhabitants in the common house of planet earth in the long run (Spangenberg, 2002). Sustainable development integrates multiple strategies, an efficient and fair use of natural resources, as well as adaptation of human needs and coexistence in balance with natural cycles (UNGA, 2015; IGS, 2019). To implement the sustainability goals, a major challenge is to prevent conflicts related to environmental change from violent escalation that destroys the conditions for cooperation, and to manage them constructively and peacefully (Scheffran, 2020a).

Asking for explanations of global challenges and governance approaches to contain them, this article follows the hypothesis that globalized expansionism in the Anthropocene is reaching multiple limits and crises that challenge the current world order and induce systemic transitions toward new competing orders which require cooperative governance to contain geopolitical conflicts. The aim is to move from a nexus of problems, including violence and destruction, to a nexus of solutions, based on cooperation and environmental peacebuilding. To discuss the interplay between geopolitical conflict and cooperative governance in the social-ecological transformation, two case studies are used, the energy-security nexus and the climate-conflict-migration nexus, both linking natural science system levels and social science actor levels to move from negative risk cascades to positive synergies between sustainable development and peacebuilding.[1]

1 The following selective review and synopsis is partly based on three decades of research by the author on environment and security in the framework of limits to the Anthropocene, partly written in German language. The aim is to provide new insights through synergistic knowledge integration, merging historic developments and most recent events. A conference on "Limits to the Anthropocene" was conducted in 2011 at Hamburg University, with Paul Crutzen as speaker. See: https://www.clisec.uni-hamburg.de/research/conferences/limits-anthropocene.html.

2. Expansion and division since colonial times

The past centuries were significantly determined by the colonial expansion, with consequences until recent times. After the voyages of Columbus, poverty, hunger, persecution and war drove millions of people from the crowded European continent to the promised "New Worlds." Here natural and human resources were heavily exploited by conquistadors and settlers, with millions of slaves from Africa, genocides among indigenous peoples and the destruction of traditional livelihoods, the spread of invasive species and deadly diseases (Reinhard, 2016), for instance killing in North America about 90% of the indigenous population (Koch et al., 2019). Technical progress, military superiority and religious justification facilitated the appropriation of foreign wealth and comparative advantages to European economic development, consolidating Western dominance on a global scale. Following the global empires of Spain and Portugal, then the Netherlands and France, Great Britain extended its lead and established a world empire based on the Industrial Revolution since the 18th century and domestic coal, fuelling long-distance transportation and mechanized mass production in the capitalist economy (Menzel, 2015). The colonial powers shaped the economic base in their periphery to become suppliers of raw materials to the center. This structure was inherited by the new politically independent states, and the deeply ingrained economic dependency continued.

In the 19th and 20th century great power competition Germany found itself disadvantaged in the acquisition of colonies and tried in vain to shift the geopolitical power games to its favor by military force in two world wars. The Russian Revolution (1917) established the Soviet Union, which unified large parts of the Eurasian continent, providing a powerful counterweight to the Western world. After World War II, the United States was able to expand its hegemonic power (through the Atlantic Charter, Bretton Woods system and NATO). In the East-West conflict, the ideological competition between capitalism and communism spurred the nuclear arms race and the near extinction of humanity through nuclear war.

Colonialism continues to have an effect until today, dividing the world into a more wealthy Northern hemisphere and the Southern hemisphere with low levels of human development and democracy, social inequality and fragility (Scheffran, 2023). Although many countries of the Global South have been disadvantaged by foreign exploitations and invasions, they are often blamed for their own weaknesses. Perceptions of injustice are relevant until today, as well as the demand for economic growth in the global South, anti-colonial attitudes and the quest for a decolonial turn.

While the prosperity of industrialized nations has often been built upon the exploitation of less-developed regions, it is crucial to acknowledge the complex historical, political, and economic factors on both sides which preclude simplistic distinctions between "good" and "evil." Governments in developing countries cannot easily escape realist power competition and have made strategic choices, like deregulation to attract foreign investments, which contributed to dependence, debt and resource extraction under inequitable conditions. Workers in these regions frequently face low wages and hazardous working conditions, and the areas bear a disproportionate burden of environmental degradation and climate change impacts. These countries consistently score poorly on environmental performance indexes for various reasons which endangers their own people and the world. To address these disparities and promote shared responsibility and cooperation, it is important to strive for a more equitable and sustainable global future.

3. Multiple limits and crises in the Anthropocene

Although it appears logical that unlimited expansion cannot go on forever, the question is how far it will continue, where and when limits might occur and what the consequences are when limits are reached. When expansion of a system is constrained or facing a countering process, in the resulting period of crisis the system is reshaping and transforming. This question is not hypothetical in a world reaching multiple limits (environmental, economic, social, political and scientific-technical) and facing multiple crises, conflicts and catastrophes (see Figure 1 and further Scheffran, 2021, 2023), leading to an "Anthropocene crisis" (Valladares et al., 2019; Simon, 2020; Collste et al., 2021; Kennel, 2021; Kim and Kotze, 2021; Kish and Quilley, 2021; Li et al., 2021; Bouchard, 2022).

3.1. Ecological limits

In the course of history, the human population has been growing exponentially by increasing birth rates and lowering mortality rates, leading to the expansion of the human sphere in terms of capital, investments, income, technology, energy and resource flows, political power and violent forces. Two centuries ago Malthusian concerns emerged about an increasing discrepancy between exponentially growing population and linearly increasing food production, potentially leading to resource scarcity and pollution, mass famines, diseases and other catastrophes. Political economists like James Anderson and Karl Marx remained skeptical of simple population theories that justify abstention and poverty. Since then humanity apparently was able to overcome resource constraints and expand into new spaces through problem-solving capabilities, technical and social innovations that generated higher productivity and more wealth on a shrinking natural resource base. In addition, millions emigrated from European countries and exploited the resources in other parts of the world; with growing prosperity birth rates are shrinking in the demographic transition. Despite an eight-fold increase in the world population since 1800 food production was largely able to keep pace, while catastrophes limiting population growth have not yet occurred at the magnitude expected, although many disasters haunted humanity, including the two world wars and the violent struggles for natural resources such as land and fossil energy. Continued pressure on natural resources and ecosystems raises the question when the carrying capacity is reached and whether a sustainable balance between nature and society will be established by limiting the impacts or the causes of growth (Amoiradis and Stankova, 2020).

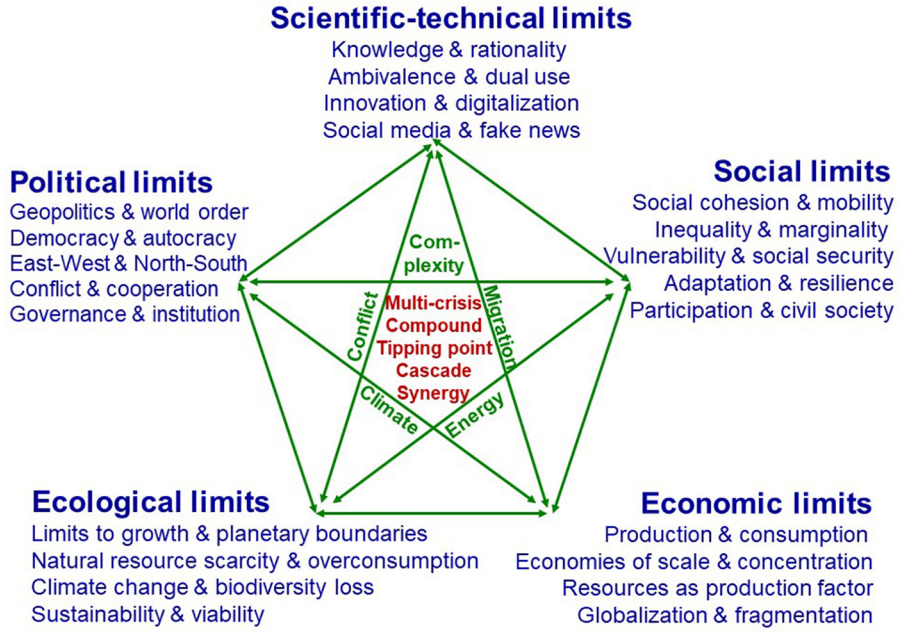

FIGURE 1
Interactions between multiple dimensions of limits in the Anthropocene and related factors (blue), connected to multiple crises and complex processes (red) in key problem areas (green).

The report to the Club of Rome on "The Limits to Growth" (Meadows et al., 1972) projected the potential for collapse of human civilization and the opportunities to prevent it by resource efficiency, environmental protection and growth limits. So far global development is pretty much in line with the scenario of doubling resources available as compared to 1970. Further development depends on the interaction of socio-economic drivers and political power structures in response to environmental change. From the perspective of political ecology, a key challenge is to prevent the failure of ecosystems to sustain increased economic activities and to illustrate the necessary concept of sustainable development. The task is to adapt and integrate human footprints within viable tolerance limits for different resource types into nature's material and energy flows, including water, forests, soils and arable land, waste and pollutant emissions, species loss, ocean protection and exploitation of raw materials (UNEP, 2019).

Due to accelerating globalization and growing human footprints, nine planetary boundaries have been identified, in the dimensions of climate change, stratospheric ozone depletion, atmospheric aerosol loading, biogeochemical cycles, land-use change, biosphere integrity, introduction of novel substances, freshwater consumption and ocean acidification (Rockström et al., 2009; Steffen et al., 2018). Within these boundaries a "safe operating space" must be guaranteed to maintain security, resilience and sustainability (regarding transgression of boundaries for novel entities see Persson et al., 2022). Certain thresholds and tipping points must not be violated, as they would trigger abrupt and irreversible changes leading to "tipping cascades" that endanger global stability (e.g., Lenton et al., 2008; Milkoreit et al., 2018; Franzke et al., 2022). Due to uncertainties in complex systems, however, thresholds cannot be determined precisely. To increase time for action, safety margins must be maintained which however are hard to define and protect if humanity pursues exploitation pathways running into them which requires to design safety margins as repellents, resulting in efforts to stay as far as possible away from them. When more and more boundaries are reached, the growing impacts become more imminent, first for the most vulnerable. What is to come has been outlined for climate change in the IPCC (2022b) AR6-WG2 report and for biodiversity loss in the assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2019). Neither of the problems can be solved without solving the other. It is not enough to deal with the symptoms without tackling the roots of the crisis, resource overconsumption as a common denominator for both problems and as a precondition to find solutions (IRP, 2019).

3.2. Economic limits

In neoclassical economic theory, nature plays only a subordinate role; natural resources, which are essential for the functioning of the economy, are treated as being sufficiently available and not contributing as a production factor to the creation of wealth. The capitalist economy is based on growth and seeks to conquer new and often global markets with new products. To this end, feedbacks promote growth and power: Consumers with higher incomes have more influence to secure their advantage; companies with high profits have more resources to invest in new ways of production. The accumulation of capital corresponds to the principles of exponential growth and the concentration of power, which is based on wealth and ownership of the means of

production. Accordingly, in these concentration processes the strongest have the best chances to acquire capital and power which can be used to influence political decisions.

Globalization contributes to the unequal distribution of wealth and power (Conversi, 2010), exacerbating the tension between rich and poor and the unsustainable exploitation of nature (Klein, 2007; Sachs, 2020). Falling costs and wages and the technical substitution of labor exclude large parts of the world's population from prosperity and drive regions into marginality. Lack of capital, debt and competitive pressures block development in many countries of the Global South, and the interconnected financial system renders political control and governance mechanisms ineffective. Huge investments and money flows in digital worlds are decoupled from material production or the needs of the population—as demonstrated by the financial and banking crisis of 2008, with its knock-on effects in the Greek crisis or the price fluctuations in the run-up to the Arab Spring. While a deeper, more prolonged global recession has then been averted by coordinated stimulus measures, the recovery was fragile and uneven (DESA, 2011). The sequence of crises events in the last decade (war and terrorism in the Middle East and North Africa, refugee crisis, Brexit, Trump election, pandemic, Russia-Ukraine war, energy and food crisis) also had economic consequences. These crises can be seen as indications that limits of economic expansion are being reached and contractions are in effect that induce mechanisms of de-globalization and degrowth (Kallis et al., 2018). The latest Club of Rome study concludes that without additional measures the expansion of the world population will end before the midst of the century, followed by a rapid decline of population as well as wealth (Dixson-Declève et al., 2022). An end of quantitative economic growth and a transition to degrowth will force the entire financial, economic, political and social system to undergo radical change of the economy and reorganization of the flow and usage of resources. Qualitative social development and wellbeing replace gross domestic product as an indicator of prosperity and innovation (Kallis et al., 2018; Murphy, 2022).

3.3. Social limits

The social market economy has brought prosperity to many people, but others do not benefit from the fruits of wealth, are unemployed and excluded, fall through the social security net. As global flows of goods, capital, finance, technology and communications accelerate, social and political systems are falling apart, while social and political rules that could contain the worst are under pressure. The exploitation of human labor divides society into a few winners who accumulate wealth and power, and many losers who are driven into marginalization and poverty. Privatization of social sectors causes a redistribution from the public to the private sector, in favor of high-profit top jobs and investors (von Weizsäcker et al., 2005). While privileged classes with high incomes have greater influence and opportunities, the development prospects of poor classes are limited and exposed to precarious conditions and social problems: hunger, poverty and discrimination, lack of resources and environmental destruction, diseases and epidemics, repression and violence, social exclusions and inequality, uprooting and forced displacement. Several of these factors culminated in the "refugee crisis" of 2015 when hundreds of thousands of refugees moved to Central Europe via the Mediterranean Sea or the Balkan route. Societal disorder, fragmentation and loss of control weaken the stability of social structures that secure livelihoods and social cohesion, freedom and human rights, shifting the limits to growth to the periphery of society which is particular vulnerable to crises (Dany and Dijkzeul, 2022). Dissatisfied people and victims can be mobilized by illiberal, religious, nationalist, right-wing populist movements, parties and autocratic governments. Fears of globalization trigger counter-movements, against capitalism or immigration which are not controlled by democratic structures, creating a breeding ground for discontent and radicalism, multiplied through social media linking local and global networks of discord and violence.

The 2008 financial crisis was followed by a social crisis, such as food and fuel price hikes, contracting global output and economic slowdown that reduced social spending in developing and developed countries; tens of millions more people fell into, or were trapped in, extreme poverty and hunger (DESA, 2011). The multi-crisis world also has severe implications for health and care, and hence the resilience of societies and political systems, connecting human health and planetary health (see Spicer et al., 2020 and the various Lancet health commissions, in particular Lancet, 2022). The COVID-19 pandemic posed a tremendous social crisis, due to the uneven distribution of goods and burdens, opportunities and resources, leading to disadvantage and marginalization, inequality and injustice from both the crisis itself and some of the policy reactions to it, such as the stay-at-home orders and economic lockdowns (Haase, 2020). Public health crises like the COVID-19 pandemic test the robustness of institutions and show the fragility of government capacities to protect their citizens, people express their frustrations, and social movements call for policy and system change (King and Carberry, 2020).

The double shock of the COVID-19 pandemic and the Russian invasion of Ukraine show how the complexity of overlapping crises can multiply the impact of each crisis, including rising levels of inequality and exclusion. For instance, surging inflation rates, which began in 2021, as well as the food and energy crises set off largely by the war in Ukraine, have precipitated and worsened the debt crisis in many lower income countries. Combined with the existential threat of climate change, a storm of events has been set in motion, including social unrest and political instability in parts of the world. A world in multiple crises has become a backdrop for solving the world problems, but may also trigger new movements to counter this trend (Menon, 2023).

3.4. Political limits

Since the end of the Cold War and in the transition from a bipolar East-West conflict via a unipolar to a multipolar world, complex and destabilizing crisis dynamics have evolved, triggering chain reactions, tipping points and cascading events across political scales (Scheffran, 2008, 2016). Financial crises also affect political instability, not only because citizens blame governments for their loss and oppose bailout decisions (Vaugirard, 2007), but because of

multiplier effects disrupting the fabric of the globalized economy and its wealth production. Globalization out of control and its structural violence put pressure on states, create geopolitical power struggles, violent conflicts and terrorism, and provoke people to move, resist and protest. This was demonstrated by the disintegration conflicts in the Balkans and the former Soviet Union in the 1990s, the wars in Iraq and Afghanistan in the wake of September 11, 2001, as well as the conflict landscapes of the 2010s (Arab Spring, Syria, Ukraine), involving nationalist and autocratic governments. Nationalism is one response to globalization and crisis threatening the nation-state, which is supposed to protect against chaos in the world, although nationalist rivalry turns the globe into a battlefield (Scheffran and Schürmann, 2020). Between the "hammer of globalization and the anvil of nationalism" (Conversi, 2014), international and transnational violence are linked to intra-societal dynamics of violence, including religious and right-wing populist movements against equality and tolerance, radical activism against exploitation and injustice, differences between "modern" urban populations and "traditional" rural populations. Here energy and food crises, climate change and natural disasters combine with war, refugees and political instability. Fractures of tension run through the Mediterranean region and the Arctic, resource-rich areas of Africa and drug-growing areas of Afghanistan and Central America, rain forests and ecologically degraded zones, the slum areas of megacities.

While after 2011 the number of terrorist attacks and their victims increased significantly (mainly due to Islamist terrorism), these numbers decreased recently (Friedensgutachten, 2020). Parallel to nationalism, right-wing extremism has increased in Western democracies, operating through social media with conspiracy theories and hostility to science. Initially decreasing after 1990, the number of armed conflicts rose again in recent years, especially in the Middle East and North Africa. In Libya, Syria and Yemen, global or regional powers such as the U.S., Russia, Iran or Saudi Arabia intervened without managing the conflicts. Great power rivalries determine world affairs and weaken international norms and institutions. In a multipolar world, Western expansionism is facing limits by other major powers, above all China, Russia and India, the Islamic world as well other countries in the Global South which comprise more than three quarters of the world population (on the crisis of the Western liberal order see Jacques, 2009; Morris, 2010; Ferguson, 2012, 2013; Brown, 2019).

3.5. Scientific and technical limits

Science and technology by design seek to move beyond the limits of knowledge and the boundaries of human capacity but at the same time create new ones. They support and expand, but also replace the abilities of the human body, notably hands and feet, sensors and brain, helping to reach out beyond daily experience into remote worlds, expanding knowledge and power or constraining them. They play an ambivalent role as they can create opportunities for both exacerbating and solving problems, change the world constructively and destructively, accelerate and decelerate growth, impinge on ecosystems and their life-support or address limits and scarcity of resources. They can ease the hardships of human existence and offer solutions for a sustainable relationship between nature and society so that more people can live on earth, but they also enable more effective means of violence and resource exploitation. The more humanity relies on the scientific-technical civilization and the *technosphere*, the greater the temptation is to resort to technical innovations and interventions, which in turn may bring new problems (Ribeiro Mendes, 2021), as raised in critical discourses on genetic engineering, geo-engineering or artificial intelligence. Attempts to control technology by separating beneficial from harmful uses is complicated by the ambivalence of science and the dual-use of technology, notably between civil and military applications (Altmann et al., 1998; Forstner and Neuneck, 2018).

Advanced weapons systems allow the quest for military superiority and force projections across the globe and in space (Scheffran, 2015) but only for those being first until others follow. Different technology fields are merging, including transportation, information, and communication systems as well as micro-, nano-, and bio-technologies, the confluence of globalization and miniaturization of violence, and the linking of information warfare on our home computers through global networks. Interconnected are the automated battlefields of air, water, ground, space and cyberspace. In a complex world with multiple interfaces of human-computer interaction fact and fiction are hard to separate and verify (Redlawsk et al., 2022). In the post-factual age of *fake news* and *hate speech,* multiplied by social media and the internet (Baldauf et al., 2019), science itself is coming under pressure, society is controlled and democracy is at stake (Ibid.). Respecting the limits of bounded rationality, "science for the post-normal age" (Funtowicz and Ravetz, 1993) concerns urgent decisions with high stakes, uncertain facts and disputed values in scientific fields like technology and risk assessment in climate and environmental research, addressing complexity, uncertainty, interdisciplinarity and transdisciplinarity in knowledge production beyond academic disciplines (Lüthje et al., 2011).

4. World order under pressure: loss of control and geopolitical conflict

4.1. Global power shifts

The more the expansive growth model encounters limits, the more evident are marginal costs and risks in a world facing intertwined multiple crises, conflicts and catastrophes that appear as wicked problems (Rittel and Webber, 1973; Scheffran, 2008; Schröder, 2022) which reinforce the erosion of the rule-based international order and loss of control by the Western hegemony (Taylor, 2020). At the end of the Cold War, the U.S. was considered the unchallenged superpower, NATO the dominant military alliance, the Western world and Europe in particular a model of success, and neo-liberal globalization without viable alternatives. Three decades later, they are all in crisis. The world of 1990 has given way to a confusing situation in complex crisis landscapes, where fractures of globalization and systemic turbulence (Brzoska et al., 2019) undermined multilateral institutions. One explanation is that we are experiencing a world in transition, an interim period

in which the old order is challenged by existential problems that can no longer be solved within its framework before a new order is found (Schröder, 2022).[2] Possible options include global power shifts and geopolitical conflicts, especially between China and the United States, or multipolar power constellations with multiple competing orders where the liberal order could persist with limited scope (Flockhart, 2016). Whether the limits to the Anthropocene are largely limits to the expansion of the Western world order or limits to humanity as a whole, depends on the pathways pursued and their impacts on the planet. New solution paths are required without inadmissibly reducing the complexity of the world.

4.2. Geopolitics in the Anthropocene

As the term "*Zeitenwende*" suggests, the on-going developments have the potential for an epochal turn, similar to the French Revolution at the beginning of the 19th century or the beginning of the 20th century. In some regards the sequence of events is reminiscent to the destabilization of the world order a hundred years ago, with World War I, the Spanish flu, the world economic crisis and fascism, which led to World War II. Added to this today are the environmental and climate crises. Long-term trends can densify and intensify in interconnected tipping points and chains to extreme events: Economic crash, climate collapse, pandemics, or nuclear war (Scheffran, 2016, 2023). Spangenberg and Kurz (2023) note: "The perfect storm of converging political, security, environmental and social crises enforces an epochal turn."

Like last century, one response to the crisis is the revival of geopolitics to pursue national interests and regain control in a world of limits and crises (Ioannides, 2022). In contrast to political geography, studying the effect of geography on politics, geopolitics projects political actions in and through geographical spaces. Spatial borders allow for the inclusion of the "own" by exclusion of the "other," aiming to control both. In this regard, geopolitics has historically been used to justify imperial claims over distant territories.

The instrumentalization of geography in the framework of geopolitics has long evoked negative associations in Germany. While the geographer Friedrich Ratzel did not refer to geopolitics in his 1897 work "Political Geography," Karl Haushofer used geopolitical thinking to justify expansion of Nazi Germany's "Lebensraum" (living space) to the East (Herwig, 1999). After World War II, geopolitical ambitions in Germany were discredited by the lost war and regained significance after unification in 1990, now in a European framing. A growing geopolitical role for Europe was envisioned by some leaders, but remains controversial. In the Anglo-Saxon world, geopolitical traditions from Mackinder to Brzezinski, Huntington and Kaplan are continued (Huntington, 1996; Kaplan, 2009), seeing the results of the two world wars and the Cold War from a winner's perspective. Former U.S. national security adviser Brzezinski (1997) declared the Eurasian continent a chessboard for Western power projections.

With the declining relevance of national borders in a globalized world, the geopolitics of spaces became less important than the geo-economics of markets. When globalized economies triggered social and political crises in fragmented spaces, the nation state celebrated its revival in response. While geographic distances are shrinking through transportation and communication technologies, political distances and fault lines remain. Geopolitics has always been linked to the exploitation of natural resources which in the Anthropocene are in growing demand, especially through investments in land across national borders. With global heating and renewable energy, territoriality is becoming a new target in geopolitics (Burles, 2021). Climate change is creating new high-risk zones (hot spots) on world maps of vulnerability. As renewable energy unfolds as part of a green economy, suitable places with high solar radiation and biomass productivity, strong flows of water, wind, geothermal, tidal, and ocean currents as well as related strategic materials become more valuable. Energy landscapes integrate natural and societal interactions in complex geopolitical frames for control, resistance and conflict, connecting local and global levels (Link et al., 2018). As natural limits to growth are reached, efforts to control and stretch these limits also grow, e.g., the concept of geoengineering to keep the climate system within acceptable boundaries (Maas and Scheffran, 2012; Lawrence et al., 2018; Oomen, 2019).

The mindset of geopolitics has also been spreading in technically constructed spaces. New terrain is claimed not only in distant regions of the world or in outer space, but also in cyberspace, in the biological microcosm or in the nanoworld (Al-Rodhan, 2015; Ruhl et al., 2020). While distances are compressed in mapping the micro-world of genomes and brains, satellites and geographic information systems extend the macro view in connecting all areas globally. With the networked worlds of social media and their two-way windows between internal and external worlds, potentially all connected human beings can be located, accessed and controlled (Zuboff, 2019).

Combining spatial and social network analysis has become a field of research in the systematic study of interstate conflicts, considering relational theories of power through a combination of territorial and network embeddedness. World War I is an empirical example to illustrate how alliance formation between friendly and hostile states can explain the cataclysmic diffusion of conflict within physical and network spaces. Rather than simple contiguity, territorial embeddedness and network density are conceived as components of political relations in interstate rivalries and disputes (Flint et al., 2009; Vasquez et al., 2011). Emerging from the tumultuous 20th century were numerous institutions and organizations, including the United Nations, serving as social and political antibodies to such problems. Their effectiveness is seriously challenged in today's multiple crises (see Posocco and Watson, 2023).

Critical approaches to geopolitics doubt that human behavior is determined by geographical factors and criticize that borders are used for political discrimination, for example against female, ethnic, religious or migrant groups. From a feminist and racial perspective, geopolitics serves to enforce patriarchal structures and

2 In his famous statement in the Prison Notebooks nearly hundred years ago, Antonio Gramsci spoke of an interregnum: "The crisis consists precisely in the fact that the old is dying and the new cannot be born; in this interregnum a great variety of morbid symptoms appear" (English translation cited in: Hoare and Nowell-Smith, 1971). See also Babic (2020).

white supremacy (Tilley, 2014). In local contexts, participatory approaches and resistance can create free spaces. Where alternative forms of "Anthropocene Geopolitics" (Dalby, 2020) are evolving, remains to be seen. By developing interfaces with other disciplines, geography opens the possibility of their integrative fusion. This would be a different "revenge of geography" than Kaplan (2009) has expected in his work.

4.3. Revival of old geopolitics

In current crisis landscapes, there is a revival of old-fashioned geopolitical strategies of confrontation, militarization, arms race, violence, hot and cold war. Global military spending reached record levels, already before the Ukraine war, and even more in 2022 with USD 2240 billion (SIPRI, 2023). Other crisis indicators also increased substantially in recent years, such as violent conflict and forced displacement. The nuclear arms race has become less regulated following the rejections or non-ratification of arms control agreements (ABM, INF, Open Skies, CTBT, START). While commercialization, militarization and weaponization of outer space proceed among more countries, attempts to enforce arms control in space failed (Meyer, 2020). Militarization also extends to cyberspace and hybrid warfare, attacks through drones, the Internet, civilian infrastructures and social media, where the lines between war and peace are blurred.

From a European perspective, geopolitical challenges emerged in all geographic directions: through Russian threats and power games in the East, US nationalism and hegemony in the West, the destabilization of the Mediterranean region in the South, and climatic change, resource struggles and power rivalries in the Arctic North. Combining economic capitalism and state socialism, China is trying to reshape the international order and expand its global political influence, with economic growth, free trade, advanced technologies, coalition formation, military buildup and the "New Silk Road" connecting infrastructures on land and sea, from East Asia to Europe and Africa. The U.S. is struggling to maintain its leadership role, imposing trade restrictions and forging alliances in the Indo-Pacific region which is becoming highly armed like the transatlantic; some Western narratives project a new Cold War with Russia and China or even a World War (Brands and Gaddis, 2021; MacGregor, 2021) while a new block confrontation is rejected elsewhere. In addition, there is the climate crisis and other environmental changes that combine as crisis multiplier.

4.4. National borders and planetary boundaries: geopolitics in the Russia-Ukraine war

Old and new geopolitical framings interfere in complex ways in Russia's attack on Ukraine. In further shifting the coordinates of world politics toward confrontation, at first glance it seems to resemble 20th century territorial conceptions of geopolitics, like territorial claims, control of national borders, artillery and tank warfare, etc. On the other hand, this war is a burning glass of new geopolitical framings of emerging security issues, such as cyber and hybrid war, drone and space warfare, anti-globalization and energy transition, environmental and climate change. At the intersection of old and new geopolitics is the nation state (Conversi and Posocco, 2022), as a promoter of territorial expansionism and fossil capitalism benefitting from a warming Arctic on the one hand, and as a defender against globalized expansionism and renewable low-carbon energy transition in Western countries. In its present forms the nation-state is inadequate to handle the global commons and interconnected crises, and nationalism is a major obstacle to effective and coordinated global mitigation strategies against climate change and other crises which "cannot be tackled without combining a diversified set of policies at every level of government and governance" (Conversi and Posocco, 2022).

An additional dividing line is the propagated ideological "battle between democracy and autocracy" which seems to find its geopolitical representation in the Russian-Ukrainian border between the transatlantic Western world and the Eastern Eurasian land mass. Such a rift is constructing and justifying a new Cold War narrative with proxy wars (Scheffran, 2000). This war looks already like a worst-case scenario: destroyed cities with numerous dead and wounded people, millions of refugees, accusations of genocide, attacks on nuclear facilities, spirals of escalation on the threshold of world or nuclear war, economic warfare, volatile food and energy prices as well as increased military spending. It distracts attention and resources away from future challenges to planetary security and constrains the most important resource for solving the environmental and social crises, as well as the willingness to cooperate. The war acts as a crisis multiplier, pouring oil into a world on fire, with unforeseeable tipping points and cascading events, similar to the First World War, reviving realist thinking to explain the Ukraine war as a fault of the Western liberal order and prevent escalation to avoid another World War (Mearsheimer, 2014; Kissinger, 2022). We are witnessing a world in upheaval, deciding whether the old system of fossil capitalism will plunge the world into catastrophe or whether smarter alternatives will prevail. This also depends on three megatrends of future development: the sustainable transformation of fossil capitalism; power shifts in North-South relationships; and the influence of civil society and social networks between democracy and autocracy (Scheffran, 2023).

The above mentioned transformations are impeded by enormous challenges and barriers, such as the effective resistance from fossil fuel industries in line with political forces interested in keeping the status quo, the financial and technological hurdles in scaling up renewable energy infrastructure, or the geopolitical complexities that could arise from shifting dependencies on strategic raw materials and conflict minerals. A small but growing body of literature (including a number of studies in this special issue) are tackling the potential positive role of "green nationalism" (Conversi, 2020, 2021a) that supports national sustainability and is characterized by policies that safeguard the environment and ecosystems. "Exemplary communities" have made a sustainable living possible, at a small, local scale (Levene and Conversi, 2014; Conversi, 2021b) as well as the regional or national level (Posocco and Watson, 2023). Referring to Beck (2004) and reflecting on the limitations of the nation, "*survival cosmopolitanism*" has been suggested that aims for a cooperative, inclusive, coordinated, and solidaristic global order (Conversi, 2020).

5. Mechanisms for cooperative governance

To prevent multiple crises from becoming "normal disasters," experience with complex systems can be used to avoid exponential growth, chain reactions and tipping points, slow down processes and decouple them from risk amplifiers, and protect system-relevant infrastructures. It is possible to learn from one crisis for another. For instance, the experience of the COVID-19 pandemic is also relevant for the climate crisis, which is changing the planet over a longer time horizon. There are many connections between the epidemics and climatic conditions, or between the means to combat viruses and climate-relevant emissions. Whereas, in the climate crisis effective measures were refused, in the case of COVID-19, politicians displayed proactive crisis management and cooperative governance on a large scale (Lin et al., 2021). In both cases there are concerns about inter-generational solidarity, of the young with the old generation in COVID-19, and vice versa in climate change (Vinke et al., 2020). It is not only climate but biodiversity as well which is declining globally, being a breeding ground for viral diseases in a new era of pandemics under business as usual (IPBES, 2019). What can be learned from the crises for shaping the relationship between nature and society, is that hazard prevention is usually cheaper and more efficient than hazard management. There are numerous studies that have explored how the pandemic has not only been a tragedy but has also spurred positive change across various sectors of society worldwide, from education to environmental awareness (e.g., Anjankar Ashish et al., 2020; Posocco and Watson, 2023).

Contrary to geopolitical conflict, cooperative governance can help to mitigate, adapt to and manage complex crisis landscapes which requires coordination among multiple actors regarding goals, efforts and actions (Lele, 2022). Instead of perpetuating the underlying drivers, wasting resources in fighting crisis impacts, from climate change to pandemics to violent conflicts, and treating the Earth as a battleground of antagonistic interests, more reasonable is their preventive avoidance with global cooperation and common security (Olof Palme International Center, 2022). In pursuit of collective interests, governance coordinates, regulates, manages and controls interdependent social and political relations between and among actors, including coalitions, social networks and organizations of state authorities, intergovernmental and non-governmental organizations, private and other civil society actors (Morfi et al., 2021). Cooperative governance networks are essential for providing a "*bottom-up structure of local participation*, which is essential to complement the top-down imposition of a set of global regulations." (Piazza, 2021, p. 10).

Mechanisms aim to strengthen the ability to enforce decisions through rules and regulations, practices and guidelines, formal and informal institutions. To enforce cooperative efforts, policy makers can impose a punishment-reward combination for governing the commons in risky situations, for instance punishing free-riders and rewarding cooperators (Sun et al., 2021). Avoiding the effects of the climate emergency can be framed as a public goods dilemma with substantial future risk. The limited success in reaching global cooperation has been associated with a lack of sanctioning institutions and mechanisms to deal with those who do not abide by the rules. More effective than global institutions is a bottom-up, self-organization approach of local institutions to sanction non-cooperation in a polycentric approach involving multiple institutions (Vasconcelos et al., 2013).

Effective governance can help to tip the global system into a positive direction by reinforcing and synergizing solution concepts (Scheffran, 2016). Global building blocks are the 2015 Paris Climate Agreement, the 2022 Montreal-Kunming Global Biodiversity Framework (the biodiversity pendant to the Paris agreement) and the 2017 Treaty on the Prohibition of Nuclear Weapons, through an alliance of states and civil society, with an active contribution from the Global South. Countries can make the shift away from fossil capitalism, using transnational cooperation for a carbon-neutral global economy and society with renewable energy and healthy ecosystems, connecting global goals with local actions by governments, companies, communities and NGOs. On the meso level, regional dimensions play a role, such as the relationship between energy and the climate emergency in the Arctic and Mediterranean regions. Rather than continuing the fatal triumvirate of growth, power and violence, where ecological instability can induce social instability and vice versa, it is more promising to establish positive linkages between sustainability, development and peace which strengthen adaptive capacity, resilience and viability as well sustainable peace, environmental peacebuilding and the logic of peace replacing the logic of war (Frey et al., 2014; Brauch et al., 2016; Swain and Öjendal, 2018; Hardt and Scheffran, 2019; Ide et al., 2021). UN Secretary General António Guterres complains about humanity's "war against nature" and calls for "peace with nature" (Guterres, 2021; UNEP, 2021).

To face the common global challenges in a cooperative way, it is important to put hegemonic aspirations and geopolitical conflicts aside. Like in Cold War times, peaceful coexistence can be established in a world with multiple orders, even between rivals like Europe and Russia or U.S. and China. The Global South, civil society and the agents of transformation can play a moderating role and together develop building blocks for a viable world: renewable energy for all, ecological footprint within ecological limits, clean prosperity for all, and cohabitation of nation-states within a world domestic policy (von Weizsäcker and Wijkman, 2018; Scheffran and Schürmann, 2020). To ensure the habitability of the Earth, 17 Sustainable Development Goals seek to use available environmental space sustainably to endure life for all inhabitants in the Earth's common house. This will require large-scale redistribution of wealth and consumption—likely provoking those who try to undermine sustainability. To moderate conflict, a governance lens examines six key characteristics of sustainable development: limits to growth, equity, inclusion, reflexivity, participation, and international solidarity (Baker and Quinn, 2022). In addition to an efficient and equitable use of resources, it is also about adapting human needs to and living together peacefully in balance with nature. Acting with nature is more sustainable than acting against it.

In the following the interplay between geopolitics and cooperative governance is examined for two cases, the energy-security nexus and the climate-conflict-migration nexus.

6. Geopolitics and governance of the energy-security nexus

6.1. Geopolitical conflicts in the fossil-nuclear age

Energy is essential for development and prosperity, but is also a field for security risks and conflicts. Physical forces can be transformed into political power, energy shortages are perceived as security threats. While energy and its inequitable distribution can be a source of violent conflicts, military force can facilitate or impede access to energy resources and is in turn dependent on secured energy supply. In peacetime the energy infrastructure is subject to trade and cooperation, but in times of war a means and target of combat and conflict.

Energy-related geopolitical conflicts have shaped the past century and continue to do so: coal and steam powered the 19th century, oil, natural gas and nuclear energy the 20th century, and renewable energy sources are shaping the 21st century. With the expected end of fossil capitalism, crises are going to rise. Some oil-exporting countries are pursuing the goal of becoming less dependent on oil rents and diversifying their energy supply by renewables, others are promoting carbon capturing and sequestration (CCS) as a means to continue exporting their oil and gas.

Whether the transformation from fossil to renewable and low-carbon energy sources will also change the global balance of power, remains to be seen. Geopolitical fault lines are shifting with growing energy demand, diminish fuel reserves and unequal distribution, and increase environmental damage and climate change, as well as North-South differences. Complex conflict constellations are evident in recent disputes, to mention the gas pipeline controversy between Europe and Russia, territorial conflicts in the South China Sea, between Turkey and Greece in the Eastern Mediterranean or in the Arctic with its suspected gas and oil reserves. The need for strategic materials for the energy transition is creating new dependencies and patterns for conflict and cooperation.

With rising energy prices fossil fuel countries have considerable power and profits, which are invested in socioeconomic development and energy systems, but also in military capabilities. Taking the energy transition and decarbonization seriously, they would loose revenues and geopolitical influence. Amplified by weak governance, this can lead to a power vacuum, with social unrest, right-wing populism, power struggles, and spread of violence across national borders. The collapse of the Soviet Union can serve as an example here.

Hundreds of billions of Euros in investments and subsidies created dependence on the fossil-nuclear energy complex, in particular from Russia as major oil and gas exporter. The vulnerability of the fossil-nuclear energy infrastructure is demonstrated by the Russia-Ukraine war, e.g., through attacks on the whole energy infrastructure such as power generation, gas pipelines and nuclear facilities, or as a financial instrument to fund the war machine by oil and gas revenues. The war also affected the global energy system (sanctions and collapse of energy supplies, price explosion, supply chaos and social upheaval). To reduce dependence and its consequences, several governance measures were taken, including activation of oil and gas reserves, storage facilities with liquefied gas, imports from previously sanctioned countries and postponing the nuclear phase-out (Scheffran, 2022a).

Putin's attack would have been inconceivable without access to Russia's vast oil and gas reservoirs making it the most prominent of various "fossil fuel wars," such as the Persian Gulf wars or the Saudi attack on Yemen. Since the 2000s, Russian national identity and geography have become strongly entrenched in the exploitation of fossil fuels. Adopting an extreme form of resource nationalism, the Russian elites enjoyed a free hand in capital accumulation while mobilizing their citizens under nationalist agendas as Putin redefined Russia as an "energy superpower" (Rutland, 2008).

Both the Ukraine war and the climate crisis are linked in many ways to the problems of the fossil-nuclear age, highlighting its weaknesses as much as the urgency to overcome it, but at the same time it undermines sustainable solutions by redirecting funding and resources, shifting public attention, destabilizing markets, impairing cooperation, geopolitical conflicts, and threatening nature and society through arm race and war (Scheffran, 2022a). The war dramatically highlights past mistakes and failures that have led to the current crisis. The new energy crisis is shaking the global economy. Gas and oil are being used as geopolitical weapons, coal, fracking and nuclear power are back on the agenda (Kemfert, 2023).

6.2. Governing the energy transition

To become less dependent on Russian oil and gas imports, the European Union invested in renewable energy supply and climate protection as part of a Green New Deal. The rapid rise of renewable energies is transforming the geopolitical map, in a race for technological innovation and dominance. Most countries have viable renewable energy potentials to become independent of fossil fuels, create energy security and improve their trade balance. Transformation offers strategic advantages for these countries, making them less vulnerable to supply shortages and price volatility, political instability, terrorist attacks and armed conflict. A fully renewable power supply is technically feasible if different sources are available and the variability of power generation in the grid is mitigated by an energy mix (Breyer et al., 2022). The sharp contrast between "war on oil" or "peace through the sun" (Alt, 2002) indicates that a change in energy supply may be associated with a system change that offers the opportunity for cooperation and peacebuilding.

Renewable energy sources and their infrastructures are not without conflict. They require important natural resources (land, water, food crops, minerals) whose competing uses create tensions. Environmental impacts lead to local protests and resistance against power grids, dams, bioenergy, large wind and solar plants (Scheffran and Cannaday, 2013; Scheffran, 2020c). Although the energy transition will make old geopolitical instruments less important, they will not disappear. Even if we can never "*embargo the sun*" (Carter, 1979), new dependencies and vulnerabilities could emerge. Solar panels, wind turbines, electric vehicles and energy storage require non-renewable minerals and metals for their production which are found in Latin America and Africa, in China, South and Southeast Asia, and on the ocean floor.

Strategies to control conflict minerals aim to improve transparency along global supply chains. Countries with rich deposits of critical materials could leverage their power, in particular China, the largest producer of rare earths. Mining and production of the materials are expensive, environmentally damaging and subject to price volatility.

Recycling and reusing critical minerals in a circular economy reduce dependence and counteract cartelization. The spread of renewable energy increases electrification and stimulates electricity trade, which promotes regional cooperation, interconnected grids and balancing between energy sources. Regulations can contain the risks. Control of the network infrastructure includes physical assets and virtual connections, as well as manipulation of power grids. An example is the cyberattack on Western Ukraine's power grid in December 2015, which left more than 230,000 people in the dark for up to 6 h. During the 2022 war, disruption of a commercial ViaSat satellite affected thousands of wind power stations in Germany (ESPI, 2022). Consequences could be minimized with "smart grids" or contained with counter-countermeasures and rules. Future energy paths are to be systematically evaluated and compared on the basis of suitable criteria. Finally, renewable energy enables cooperation between alliances of states, transnational and sub-state actors (citizens, cities and companies). Green forms of nationalism are also possible, in "exemplary" nation-states that have achieved the highest levels of sustainability (Conversi and Posocco, 2022).

The new energy diplomacy is about partnerships in sustainable energy landscapes, with connections between city and country, global networks and regional markets. To counteract the usual processes of concentration and accumulation in capitalism, systemic change is based on participatory governance and democratic control of power structures (Kohl, 2002; Walker and Johnson, 2018). Decentralized energy systems and intercontinental distribution networks can be combined, promoting cooperation between civil society, private actors and governments in North and South, acting as "prosumers" (producers and consumers) for own consumption or socializing of energy through the power grid. In such a Viable World, "Power to the People" has a new meaning (Kander et al., 2014; Stephens, 2019).

7. Geopolitics and governance of the climate emergency, conflict and migration: from negative to positive nexus

The greatest security risks and conflict potentials from fossil energy use in the long term may arise from intertwining the energy and climate crisis with militarization and armed conflict.

7.1. Climate change as a risk multiplier

If the average global temperature rises over the 1.5 degree limit above pre-industrial levels agreed in the 2015 Paris climate agreement (one of the planetary boundaries), a vast range of consequences is expected, including sea-level rise, storms, floods, droughts, forest fires and other weather extremes (IPCC, 2023). Tipping points in the climate system and impact chains might lead to cataclysmic consequences in a "climate endgame" leading to "hot-house" earth (Steffen et al., 2018; Kemp et al., 2022). Without concerted and rapid global action, the window of opportunity for a viable future could close in the coming decades. Billions of people are at risk when the violent power of nature is unleashed in manifold ways and many regions. Then even those parts of humanity in the global North that have contributed most to emissions and are best protected would increasingly suffer the consequences of accelerated heating, directly through climatic impacts or indirectly induced through infectious diseases, economic crises, violent conflicts and refugee movements (IPCC, 2023).

In the complex chain of crises suggested earlier, global heating is connected with other problem areas through multiple linkages from local to global levels, acting as a risk multiplier which disturbs the balance between natural and social systems and amplifies the consequences through complex impact chains. Among key pathways, climate change can affect the functioning of critical infrastructures and supply networks; intensify the nexus of water, energy and food; lead to production losses, price increases and financial crises in other regions through global markets; undermine human security, social living conditions and political stability; and induce or aggravate migration movements and conflict situations (see further Scheffran, 2016). Many of these multiplier effects are related to the unsustainable resource extraction, processing and consumption which is responsible for about half of global greenhouse gas emissions and around 90% of biodiversity loss and water stress which contribute to food security (IRP, 2019).

7.2. Security risks and conflicts in the climate crisis

When ecosystems and vital resources such as water and oceans, arable land and soil, forests and biodiversity are lost worldwide, or weather extremes threaten livelihoods, human security and social stability are at stake (Scheffran, 2020b, 2022b). Climate change insecurities vary regionally and combine with other stressors. In the most affected regions the erosion of social order and state failure may trigger a spiral of poverty, hunger, persecution, corruption, crime, violence and forced displacement, particularly in the equatorial regions which due the combination of temperature and humidity will become literally uninhabitable outside of climatised buildings, potentially driving large fractions of the population away. Particularly critical is the situation in fragile regions with social fragmentation, weak governance and inadequate management capacities. Human insecurity and personal instability interact with social and political instability. The impact of environmental change could undermine the ability to solve problems and further dissolve infrastructures, such as healthcare systems, as a consequence of the collapse of the social fabric, in particular in fragile societies.

Security risks and conflict potentials of climate change undermine economic development and human security, especially for poorer countries and populations. Conflict-relevant mechanisms are the lack of water and food, weather extremes or environmentally induced migration. Storm and flood disasters, for example, cost the lives of many people or displace them to neighboring regions, which contributes to the spread of conflicts.

Although many empirical studies find a statistically significant link between climate risk and conflict risk, others see only an ambivalent or no proven link (Scheffran et al., 2012; Buhaug, 2015; Ide, 2015; Mach et al., 2019; Scartozzi, 2021; von Uexkull and Buhaug, 2021; Scheffran, 2022b). Whether climate change leads to violent conflict depends on the political and socio-economic context. Conflict factors can intensify in hotspots: Most affected are weak countries that depend on agriculture, are vulnerable to weather extremes, and have low levels of aid. Costs and risks are unfairly distributed between those who cause and those who suffer from the consequences of climate change.

7.3. Securitization, militarization and geopolitical conflict

While scientists are still discussing the conflict potential of climate change or resource scarcity, the consequences of a heating planet are considered in geopolitical and military threat analyses (e.g., White House, 2015). As the climate crisis progresses, climate policy is under pressure from securitization and militarization. Attempts to address the security risks of climate change in the UN Security Council have so far failed because of Russia, China and other G77 countries. Military institutions such as the Pentagon see climate change as a threat multiplier that endangers national and international security, complicate military operations—or make them necessary in the first place, from disaster control to conflict management to the assertion of resource interests and claims for power in a world determined by climate chaos (Klare, 2019).

This could trigger a downward spiral of climate risks and conflict risks. The Malthusian fear of climate wars can lead to counterproductive actions that exacerbate the problem. Military instruments could be used to defend against climate and conflict risks, generating fears of threat and diverting more resources, thus preventing cooperative solutions (see Scheffran, 2022b). Climate policies could also be securitized when they lead to risks and conflicts, including mitigation, adaptation and climate engineering (Scheffran and Cannaday, 2013), but in turn the security policy could be "climatized" which means that new practices from the field of climate policy are introduced into the security field, for instance, disaster management, adaptation, mitigation or sustainable development are emerging in the defense sector (Oels, 2012; Aykut and Maertens, 2023). Other examples refer to environmental and resource policies becoming a security issue, e.g., building dams in Turkey, Ethiopia and Laos raising security concerns in downstream countries.

7.4. Environmental and climate impact of warfare

Military, armament and warfare are not only dangerous for humans, but also for the natural environment. Often enough, the environment fell victim to scorched-earth warfare or was manipulated and used for warlike purposes, including ecocides (Scheffran, 2022a). Armed conflict consumes and strains natural resources (air, water, soil, land, forests and oceans), damages related infrastructures and services (energy, food, health, sanitation, waste collection), and has negative impacts on ecosystem conservation. Violence and war affect the living conditions of all lifeforms, armed conflicts threaten biodiversity and its protection, diminish wildlife abundance and species richness. Large areas of land were polluted by poison gas warfare in World War I, pollutions and devastations of World War II, and multiple environmental stresses of the Cold War, from large-scale use of herbicides such as Agent Orange in the Vietnam War to the nuclear arms race.

The removal of the dangerous chemical and radioactive legacies alone costs hundreds of billions of dollars until today. High military spending comes at the expense of environmental protection and sustainable resource use, preservation of biodiversity and reduction of pollutants. The 1991 Gulf War brought environmental damage from oil fires in Kuwait and oil releases in the Persian Gulf. In a more crowded world, the high resource intensity and environmental impact of armament, war, and military is an existential problem, even more with a growing resource competition between renewable energy, digitalization, armament and other uses in a resource-constrained world.

Armies are among the largest consumers of energy and other resources and release significant environmental pollutants Fuels and toxic chemicals from military activities can remain in the environment for long periods. Moreover, armed conflicts nourish themselves through the exploitation of valuable resources, from forests to raw materials. Military interventions or deployments, in turn, often serve to secure resource supplies and protect infrastructures against the impacts of climate change. Due to the high dependence on fossil fuels, military activities also cause a considerable share of emissions. The military infrastructures worldwide release large amounts of GHG emissions: "Armed forces have a massive carbon footprint that is absent from global accounting." (Rajaeifar et al., 2022) The carbon footprint of the EU military has been estimated 2019 as nearly 25 million tons CO_2e (Parkinson, 2021). In 2020 the U.S. Department of Defense accounted for more than 50 million tons CO_2e, nearly three-quarters of U.S. government emissions which is nearly 2 percent of global emissions (van Schaik et al., 2022).

The intense warfare in Ukraine poses severe risks for the environment, for example through chemical and radioactive substances, the flooding of areas, growing military spending, production, deployment, operations and destructions of infrastructure that have to be rebuilt (Pereira et al., 2022a; Tollefson, 2022; Shumilova et al., 2023). Like in other violent conflicts, large quantities of fossil fuels and GHGs are being released, through the operation of military systems, the arms buildup before and after the war. The war can both block and initiative cooperative efforts for environmental and climate policies, thus undermine progress in the sustainable development goals (SDGs) (Pereira et al., 2022b).

7.5. The climate-conflict-migration nexus

Compound risks may emerge particularly in the nexus of climate change, conflict and migration, together with other societal problems which affect the living conditions in many parts of the world and could turn into destabilizing security threats. The complex connections in this nexus are still poorly understood,

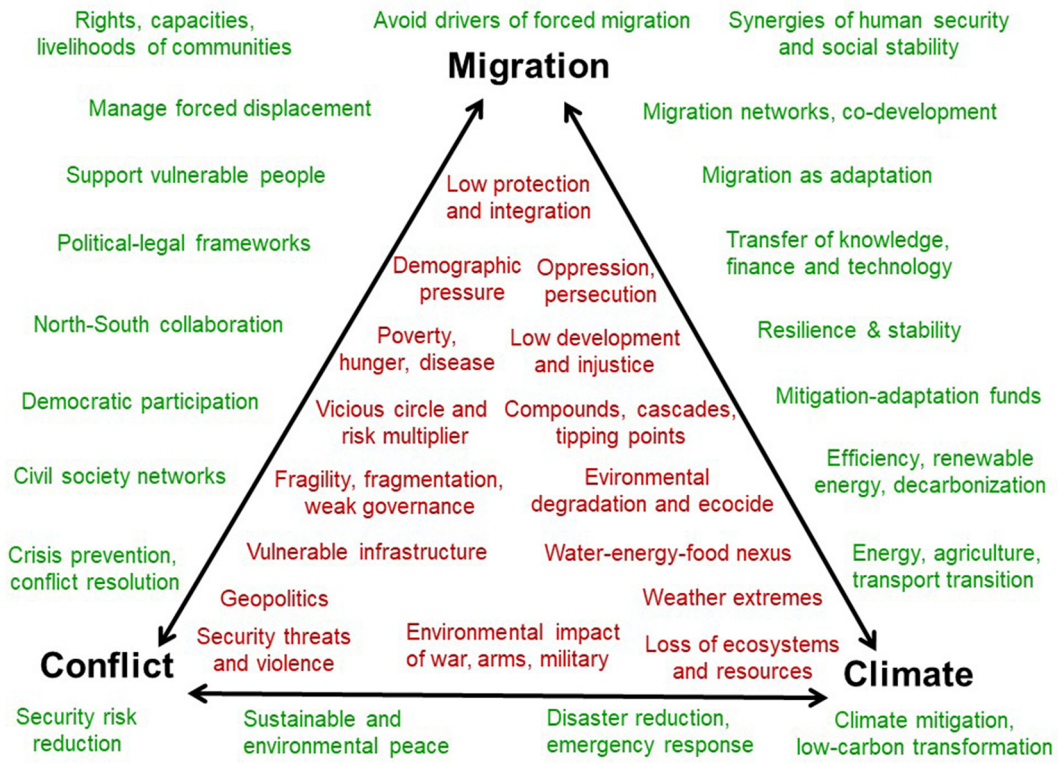

FIGURE 2
The climate-conflict-migration nexus: from cascading risks (red) to governance measures and synergies (green).

lacking simple causality or determinism. In addition to the direct drivers of forced migration, there are multiple, indirect and mutually reinforcing linkages between low development and poverty, oppression and persecution, armed conflict and violence, environmental degradation and resource depletion, making it difficult to distinguish environmental and societal conditions and mechanisms (Black et al., 2011; Burrows and Kinney, 2016; Scheffran, 2017; Boas et al., 2019; Hoffmann et al., 2020). Similar, climate change and violent conflict are connected through multiple and often indirect pathways (Ge et al., 2022). Less investigated is the impact of migration on either climate change or conflict, e.g., through CO_2 emissions and other pollutions, resource depletion or disputes in countries of origin and destination (BMZ, 2021).

While the negative nexus of problems has attracted considerable attention, the transformation to a positive nexus of interconnected solutions and synergies in related fields of governance, in particular, migration, peace and climate policies and their constructive integration from local to global levels, involves multiple pathways from causes to consequences (Scheffran, 2017; BMZ, 2021). Although security and peace were neglected in the 1992 UNCED agreements, they are back in the 2030 Agenda, in particular in SDG 16 "Peace, Justice and Strong Institutions" which has yet received less attention, and integration with other SDGs (UNGA, 2015). Going beyond averting security threats and building technology-oriented protective measures, it is sensible to address problems through preventive, constructive and integrative solutions. These include avoiding drivers of forced displacement, in particular armed conflict and violence through peacebuilding, as well as global heating and climate injustice through mitigation and low-carbon transformation. To reduce risk, disaster preparedness, emergency responses, climate adaptation and resilience building are essential. Further measures are strengthening of rights, capacities and livelihoods of affected communities; international cooperation and transfer of knowledge, finance and technology involving civil society and migration networks; co-development, integration and institutions across regions. A humanitarian migration policy would address the concerns of affected people, avoid extreme and risky forms of displacement, and create regulated and legal migration opportunities and pathways. The effectiveness and acceptance of such proposals depends on political and legal frameworks to integrate migration (see Figure 2).

7.6. Cooperative climate governance and sustainable peace

More promising than securitization and militarization are anticipatory strategies and institution building that reduce vulnerability to climate change, strengthen adaptive capacity, resilience, and distributive justice, and rely on cooperation and

conflict resolution to promote a "climate for peace" (Rüttinger et al., 2015). Challenges can lead people to adapt or find innovative, sustainable and cooperative solutions to problems, for example more efficient use of resources and increased cooperation to reduce emissions or risks. To develop synergies and induce positive tipping points (Otto et al., 2020; Juhola et al., 2022), climate policy could support sustainable peacebuilding (Scheffran, 2022a) and conflict transformation which in turn contributes to the social-ecological transformation (Pastoors et al., 2022).

International climate governance includes the 1992 Framework Convention on Climate Change, the 1997 Kyoto Protocol, and the 2015 Paris Treaty which defines boundaries of global mean temperature and national commitments of emission reductions as well as instruments for financial and technology transfer to developing countries. While the scope and effectiveness of these measures may not be sufficient to prevent dangerous climate change, they lay the foundations and attract political support from local to global levels for a sustainable and peaceful transformation governing the Anthropocene.

To this end, climate policies need to be less conflictive. For example, interests in maintaining the climate-damaging fossil economic system, based on prosperity, consumption and profit, are in conflict with the interests of those harmed by it or supporters of an energy transition. In addition, there are disputes about certain alternative energy paths, such as bioenergy, dams and wind turbines. Accordingly, attention must be paid to social and ecological compatibility and conflict avoidance at an early stage, based on a holistic view of material and energy flows, consequential effects and acceptability. Thus, it is important to design mitigation, adaptation and protection measures (also in the context of geoengineering) in a conflict-sensitive manner (Nadiruzzaman et al., 2022) and avoid adaptation limits that trigger systemic risks and tipping points (Juhola et al., 2022). A key question is who should be protected against climate impacts and who should bear the costs and risks. Climate policy will only be successful if the global North takes a greater responsibility for solving the problem and implement stronger restrictions than the global South. While the focus on energy and CO_2 is justified in industrialized countries, in developing countries methane and nitrous oxide from agriculture play a bigger role but have been largely neglected in the North, although they have a higher warming effect and their reduction would buy time for CO_2 emission reductions.

Despite scientific warnings, a global trend toward stabilizing the climate is not yet in sight. To comply with climate safety limits there is no viable alternative to substantially cutting down anthropogenic GHG emissions by half until 2030 and achieve climate neutrality by 2050, implementing new technologies and behaviors in energy, transport and agricultural sectors (Engels et al., 2023). However, the national commitments presented by all countries are only partially met and cannot limit global temperature rise to below 2 degrees. Opportunities were not seized, and valuable time was lost (see the comprehensive assessment in IPCC (2022b, 2023).

8. Discussion and conclusions

Coming back to the initial hypothesis about the limits and crises of expansionism in the Anthropocene, it was shown that the current world order is under stress from a nexus of problems and geopolitical conflicts which require cooperative governance mechanisms to induce a social-ecological transformation toward a nexus of solutions. The case studies on the energy-security nexus and the climate-conflict-migration nexus demonstrate both the possible risk cascades and the opportunities for positive synergies.

The Russia-Ukraine war and the climate crisis once again confirm the conflict-prone dependence on and consequences of fossil energy sources. Accordingly, there is a growing urgency to replace them with a sustainable energy system. The curbing of Russian grain exports due to western restrictions and—lesser in volume—the interruption of Ukrainian exports have led to a global food crisis (in the South) and food price crisis (in the North). In addition, Russia was the largest exporter of fertilizers (due to cheap gas, high energy consumption and CO_2 emissions of the Haber-Bosch nitrogen fixing process), and the export restrictions have led to agricultural crises in wide part of Africa and some regions in Latin America—which in turn indicates a lack of food security by relying on imports.

To further prevent escalating and mutually enforcing crisis dynamics between climate and conflict risk, joint solutions using synergies are beneficial for both, making it counterproductive to play them against each other in the long-term management. In order to achieve peace and climate protection, the known infrastructural measures of a socio-ecological transformation should be implemented consistently. These include the energy, agricultural and transport transition, with energy conservation and efficiency improvements, renewable energy sources and decarbonization, electricity and hydrogen as energy sources, a circular economy and nature-based solutions (Scheffran, 2022a).

Rather than suffering from war, the social-ecological transformation could be accelerated to effectively and quickly implement energy security and sustainable peace. This requires production capacities, materials, raw materials and skilled workers, which takes time. For Europe to become a pioneer of a green transformation, a concerted effort by politics, business, science and society is required. Energy conflicts need to be minimized, as well as risky dependencies on strategic raw materials and conflict minerals. This would be the right response to the warnings of the IPCC as well as to the war, whose shock effects could become a driver for the overdue transformation. Instead of a "Zeitenwende" for an arms race and war, Europe needs an epochal turn for sustainable climate protection and a peaceful energy transition within planetary boundaries. To address the many complex challenges, the Anthropocene requires a new policy design (Sterner et al., 2019) and strengthening of civil society through networking and advocacy to stimulate bottom-up action and mobilize the pressure to induce the needed institutional changes for strong sustainable consumption (Lorek and Spangenberg, 2013).

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References

Al-Rodhan, N. (2015). *What Does Nanotechnology Mean for Geopolitics?* World Economic Forum (June 23).

Alt, F. (2002). *Krieg um Öl oder Frieden durch die Sonne*. Munich: Riemann.

Altmann, J., Liebert, W., Neuneck, G., and Scheffran, J. (1998). "Preventive arms control as a prerequisite for conversion of military-related R&D", in *Conversion of Military R&D*, eds J. Reppy, J. Rotblat, J. Holdren, and V. Avduyevsky (London: Palgrave Macmillan), 255–271. doi: 10.1007/978-1-349-14886-8_17

Amoiradis, C., and Stankova, M. (2020). The systemic crisis and the need for sustainability: an overview. *Manag. Res. Pract.* 12, 15–26.

Anjankar Ashish, P., Anjankar Vaibhav, P., Anjankar Anil, J., and Lata, K. (2020). Positive aspects of covid 19 pandemic: a blessing in disguise. *Int. J. Res. Pharm. Sci.* 11, 187–191. doi: 10.26452/ijrps.v11iSPL1.2371

Aykut, S. C., and Maertens, L., eds. (2023). *The Climatization of Global Politics*. Cham: Palgrave Macmillan. doi: 10.1007/978-3-031-17895-5

Babic, M. (2020). Let's talk about the interregnum: Gramsci and the crisis of the liberal world order. *Int. Aff.* 96, 767–786. doi: 10.1093/ia/iiz254

Baker, S., and Quinn, M. J. (2022). Populism, austerity and governance for sustainable development in troubled times. *Sustainability* 14, 14. doi: 10.3390/su14063271

Baldauf, J., Ebner, J., and Guhl, J. (Eds.). (2019). *Hate Speech and Radicalisation Online*. The OCCI Research Report. London: Institute for Strategic Dialogue (ISD).

Beck, U. (2004). Cosmopolitical realism: on the distinction between cosmopolitanism in philosophy and the social sciences. *Glob. Netw.* 4, 131–156. doi: 10.1111/j.1471-0374.2004.00084.x

Black, R., Adger, W. N., Arnell, N. W., Dercon, S., Geddes, A., and Thomas, D. (2011). The effect of environmental change on human migration. *Glob. Environ. Change* 21(Suppl. 1), 3–11. doi: 10.1016/j.gloenvcha.2011.10.001

BMZ (2021). *Preventing Crises, Creating Prospects, Protecting People.* Report by the Commission on the Root Causes of Displacement.

Boas, I., Farbotko, C., Adams, H., Sterly, H., Bush S., van der Gees, K., et al. (2019). Climate migration myths. *Nat. Clim. Change* 9, 898–903. doi: 10.1038/s41558-019-0633-3

Bouchard, D. (2022). The limits of the anthropocene: anticolonial humanity in kidlat tahimik's *mababangong bangungot* and souleymane cissé's *yeelen*. *Intervent. Int. J. Postcol. Stud.* 24, 1161–1176. doi: 10.1080/1369801X.2022.2054004

Brands, H., and Gaddis, J. L. (2021). The new cold war: America, China, and the echoes of history. *Foreign Affairs* 100, 10–21.

Brauch, H.G., Oswald Spring, Ú., Grin, J., and Scheffran, J., eds. (2016). *Handbook on Sustainability Transition and Sustainable Peace*. Cham: Springer. doi: 10.1007/978-3-319-43884-9

Breyer, C., Khalili, S., Bogdanov, D., Ram, M., and Oyewo, A. S. (2022). On the history and future of 100% renewable energy systems research. *IEEE Access* 10, 78176–78218. doi: 10.1109/ACCESS.2022.3193402

Brown, W. (2019). *In the Ruins of Neoliberalism: The Rise of Antidemocratic Politics in the West*. New York, NY: Columbia University Press. doi: 10.7312/brow19384

Brzezinski, Z. (1997). *The Grand Chessboard: American Primacy and Its Geostrategic Imperatives*. New York, NY: Basic Books.

Brzoska, M., Heller, R., Kahl, M., and Kreikemeyer, A. (2019). Das liberale Paradigma auf dem Prüfstand: Friedensforschung und Sicherheitspolitik an den Bruchstellen der Globalisierung. *Sicherheit Frieden* 37, 53–61. doi: 10.5771/0175-274X-2019-2-53

Buhaug, H. (2015). Climate-conflict research: some reflections on the way forward. *WIREs Clim. Change* 6, 269–275. doi: 10.1002/wcc.336

Burles, R. (2021). Another geopolitics? International relations and the boundaries of world order. *Int. Stud. Rev.* 23, 2108–2123. doi: 10.1093/isr/viab038

Burrows, K., and Kinney, P. L. (2016). Exploring the climate change, migration and conflict nexus. *Int. J. Environ. Res. Public Health* 13, 443. doi: 10.3390/ijerph13040443

Carter, J. (1979). *Solar Energy Remarks Announcing Administration Proposals*, eds G. Peters and J. T. Woolley. The American Presidency Project. Available online at: https://www.presidency.ucsb.edu/node/250284 (accessed May 23, 2023).

Collste, D., Cornell, S. E., Randers, J., Rockstrom, J., and Stoknes, P. E. (2021). Human well-being in the Anthropocene: limits to growth. *Glob. Sust.* 4, e30. doi: 10.1017/sus.2021.26

Conversi, D. (2010). The limits of cultural globalisation? *J. Crit. Globalis. Stud.* 3, 36–59.

Conversi, D. (2014). Between the hammer of globalization and the anvil of nationalism: is Europe's complex diversity under threat? *Ethnicities* 14, 25–49. doi: 10.1177/1468796813487727

Conversi, D. (2020). The ultimate challenge: nationalism and climate change. *Natl. Pap.* 48, 625–636. doi: 10.1017/nps.2020.18

Conversi, D. (2021a). "Geoethics versus geopolitics. Shoring up the nation in the Anthropocene cul-de-sac," in *Geo-Societal Narratives: Contextualising Geosciences*, eds M. Bohle and E. Marone (Cham: Springer International), 135–152. doi: 10.1007/978-3-030-79028-8_10

Conversi, D. (2021b). Exemplary ethical communities. A new concept for a livable anthropocene. *Sustainability* 13, 5582. doi: 10.3390/su13105582

Conversi, D., and Posocco, L. (2022). Which nationalism for the anthropocene? A comparative study of exemplary green nation-states. *Front. Polit. Sci.* 4, 857597. doi: 10.3389/fpos.2022.857597

Crutzen, P. J., and Stoermer, E. F. (2000). The anthropocene. *Glob. Change Newsletter* 41, 17–18.

Dalby, S. (2020). *Anthropocene Geopolitics: Globalization, Security, Sustainability*. Ottawa, ON: University of Ottawa Press. doi: 10.2307/j.ctvx5w8dk

Dany, C., and Dijkzeul, D. (2022). Societal divisions and social cohesion in situations of crisis. *Die Friedens-Warte* 95, 11–16. doi: 10.35998/fw-2022-0007

DESA (2011). *The Global Social Crisis, Report on the World Social Situation 2011*. New York, NY: Department of Economic and Social Affairs, United Nations ST/ESA/334.

Dixson-Declève, S., Owen, G., Ghosh, J., Rockström, J., Stoknes, P. E., and Randers, J. (2022). *Earth for All – A Survival Guide for Humanity*. Gabriola Island, BC: New Society Publishers.

Engels, A., Marotzke, J., Gonçalves Gresse, E., López-Rivera, A., Pagnone, A., Wilkens, J., et al. (2023). *Hamburg Climate Futures Outlook 2023. The plausibility of a 1.5°C limit to global warming—Social drivers and physical processes*. Hamburg: Cluster of Excellence Climate, Climatic Change, and Society (CLICCS).

Eriksen, T. H. (2016). *Overheating: An Anthropology of Accelerated Change*. London: Pluto Press. doi: 10.2307/j.ctt1cc2mxj

ESPI (2022). *The War in Ukraine and the European Space Sector*. Vienna: ESPI Executive Brief 57.European Space Policy Institute.

Ferguson, N. (2012). *Civilization: The West and the Rest*. London: Penguin.

Ferguson, N. (2013). *The Great Degeneration: How Institutions Decay and Economies Die*. London: Penguin.

Flint, C., Diehl, P., Scheffran, J., Vasquez, J., and Chi, S. (2009). Conceptualizing conflictspace: toward a geography of relational power and embeddedness in the analysis of interstate conflict. *Ann. Assoc. Am. Geogr.* 99: 827–835. doi: 10.1080/00045600903253312

Flockhart, T. (2016). The coming multi-order world. *Contemp. Security Policy* 37, 3–30. doi: 10.1080/13523260.2016.1150053

Forstner, C., and Neuneck, G., eds. (2018). *Physik, Militär und Frieden. Physiker zwischen Rüstungsforschung und Friedensbewegung*. Wiesbaden: Springer Spektrum. doi: 10.1007/978-3-658-20105-0

Franzke, C. L. E., Ciullo, A., Gilmore, E. A., Matias, D. M., Nagabhatla, N., Orlov, A., et al. (2022). Perspectives on tipping points in integrated models of the natural and human Earth system: cascading effects and telecoupling. *Environ. Res. Lett.* 17, 15004. doi: 10.1088/1748-9326/ac42fd

Frey, U., Lammers, C., Birckenbach, H.-M., Jaberg, S., Schweitzer, C., and Buro, A. (2014). *Friedenslogik statt Sicherheitslogik: Theoretische Grundlagen und friedenspolitische Realisierung*. Dossier 75, Wissenschaft and Frieden, 2014–2.

Friedensgutachten (2020). *Im Schatten der Pandemie – letzte Chance für Europa, BICC, HSFK, IFSH, INEF*, Bielefeld: transcript.

Funtowicz, S., and Ravetz, J. (1993). "The emergence of post-normal science," in *Science, Politics, and Morality. Scientific Uncertainty and Decisionmaking*, ed R. von Schomburg (Dordrecht; Boston, MA; London: Kluver Academic Publishers), 85–123. doi: 10.1007/978-94-015-8143-1_6

Ge, Q., Hao, M., Ding, F., Jiang, D., Scheffran, J., Helman, D., et al. (2022). Modelling armed conflict risk under climate change with machine learning and time-series data. *Nat. Commun.* 13, 2839. doi: 10.1038/s41467-022-30356-x

Guterres, A. (2021). *We Are Losing Our Suicidal War Against Nature*. United Nations, SG/SM/20959 11.10.2021.

Haase, A. (2020). Covid-19 as a social crisis and justice challenge for cities. *Front. Sociol.* 5, 583638. doi: 10.3389/fsoc.2020.583638

Hardt, J. N., and Scheffran, J. (2019). *Environmental Peacebuilding and Climate Change: Peace and Conflict Studies at the Edge of Transformation*. Policy Brief No. 68 (Dec.), Toda Peace Institute.

Herwig, H. H. (1999). Geopolitik: Haushofer, Hitler and Lebensraum. *J. Strat. Stud.* 22, 218–241. doi: 10.1080/01402399908437762

Hoare, Q., and Nowell-Smith, G., ed. (1971). *Selections from the Prison Notebooks of Antonio Gramsci*. London: Lawrence and Wishart, 276.

Hoffmann, R., Dimitrova, A., Muttarak, R., Crespo Cuaresma, J., and Peisker, J. (2020). A meta-analysis of country-level studies on environmental change and migration. *Nat. Clim. Chang.* 10, 904–912. doi: 10.1038/s41558-020-0898-6

Huntington, S. P. (1996). *The Clash of Civilizations and the Remaking of World Order*. New York, NY: Simon & Schuster.

Ide, T. (2015). Why do conflicts over scarce renewable resources turn violent? A qualitative comparative analysis. *Glob. Environ. Change* 33, 61–70. doi: 10.1016/j.gloenvcha.2015.04.008

Ide, T., Bruch, C., Carius, A., et al. (2021). The past and future(s) of environmental peacebuilding. *Int. Aff.* 97, 1–16. doi: 10.1093/ia/iiaa177

IGS (2019). *Global Sustainable Development Report 2019: The Future is Now – Science for Achieving Sustainable Development*. Independent Group of Scientists appointed by the Secretary-General. New York, NY: United Nations.

Ioannides, I. (2022). What European Union in the "age of uncertainty"? Weathering the geopolitical storms in a world of perpetual crises. *Intereconomics* 57, 363–367. doi: 10.1007/s10272-022-1088-8

IPBES (2019). *Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Bonn: IPBES secretariat.

IPCC (2022a). *Summary for Policymakers Headline Statements*. 6th Assessment Report, WG II, Intergovernmental Panel on Climate Change.

IPCC (2022b). *Climate Change 2022: Impacts, Adaptation and Vulnerability*. 6th Assessment Report, WG II, Intergovernmental Panel on Climate Change.

IPCC (2023). *Climate Change 2023. AR6 Synthesis Report*. Geneva: Intergovernmental Panel on Climate Change. doi: 10.1017/9781009157988

IRP (2019). *Global Resources Outlook 2019: Natural Resources for the Future We Want. A Report of the International Resource Panel*. Nairobi: United Nations Environment Programme.

Jacques, M. (2009). *When China Rules the World: The End of the Western World and the Birth of a New Global Order*. New York, NY: Penguin.

Juhola, S., Filatova, T., Hochrainer-Stigler, S., Mechler, R., Scheffran, J., and Schweizer, P.-J. (2022). Social tipping points and adaptation limits in the context of systemic risk: concepts, models and governance. *Front. Clim.* 4, 1009234. doi: 10.3389/fclim.2022.1009234

Kallis, G., Kostakis, V., Lange, S., Muraca, B., Paulson, S., and Schmelzer, M. (2018). Research on degrowth. *Annu. Rev. Environ. Resour.* 43, 291–316. doi: 10.1146/annurev-environ-102017-025941

Kander, A., Malanima, P., and Warde, P. (2014). *Power to the People: Energy in Europe over the Last Five Centuries*. Princeton: Princeton University Press. doi: 10.1515/9781400848881

Kaplan, R. D. (2009). The revenge of geography. *Foreign Policy* 172, 96–105. doi: 10.1016/j.orbis.2015.08.008

Kemfert, C. (2023). *Schockwellen. Letzte Chance für sichere Energien und Frieden*. Frankfurt: Campus.

Kemp, L., Xu, C., Depledge, J., Ebi, K. L., Gibbins, G., Kohler, T. A., et al. (2022). Climate Endgame: exploring catastrophic climate change scenarios. *Proc. Nat. Acad. Sci. U. S. A.* 119 e2108146119. doi: 10.1073/pnas.2108146119

Kennel, C. F. (2021). The gathering anthropocene crisis. *Anthropocene Rev.* 8, 83–95. doi: 10.1177/2053019620957355

Kim, R. E., and Kotze, L. J. (2021). Planetary boundaries at the intersection of Earth system law, science and governance: a state-of-the-art review. *Rev. Eur. Compar. Int. Environ. Law* 30, 3–15. doi: 10.1111/reel.12383

King, B. G., and Carberry, E. J. (2020). Movements, societal crisis, and organizational theory. *J. Manag. Stud.* 57, 1741–1745. doi: 10.1111/joms.12624

Kish, K., and Quilley, S. (2021). *Ecological Limits of Development. Living with the Sustainable Development Goals*. London: Routledge. doi: 10.4324/9781003087526

Kissinger, H. (2022). *How to Avoid Another World War*. The Spectator 17.12.2022.

Klare, M. (2019). *All Hell Breaking Loose: The Pentagon's Perspective on Climate Change*. New York, NY: Metropolitan Books.

Klein, N. (2007). *The Shock Doctrine: The Rise of Disaster Capitalism*. New York, NY: Metropolitan Books/Henry Holt.

Koch, A., Brierley, C., Maslin, M. M., and Lewis, S. L. (2019). Earth system impacts of the european arrival and great dying in the Americas after 1492. *Quat. Sci. Rev.* 207, 13–36. doi: 10.1016/j.quascirev.2018.12.004

Kohl, B. (2002). Stabilizing neoliberalism in Bolivia: popular participation and privatization. *Polit. Geogr.* 21, 449–472. doi: 10.1016/S0962-6298(01)00078-6

Lancet (2022). The 2022 report of the Lancet Countdown on health and climate change: health at the mercy of fossil fuels. *Lancet* 400, 1619-1654. doi: 10.1016/S0140-6736(22)01540-9

Lawrence, M. G., Schäfer, S., Muri, H., Scott, V., Oschlies, A., Vaughan, N. E., et al. (2018). Evaluating climate geoengineering proposals in the context of the Paris Agreement temperature goals. *Nat. Commun.* 9, 1–19 doi: 10.1038/s41467-018-05938-3

Lele, G. (2022). "Revisiting crisis governance: toward collaborative crisis management," in *Crisis Management - Principles, Roles and Application*, ed C. J. Yi (London: IntechOpen). doi: 10.5772/intechopen.106129

Lenton, T., Held, H., Kriegler, E., Hall, J. W., Lucht, W., Ramstorf, W., et al. (2008). Tipping elements in the Earth's climate system. *Proc. Natl. Acad. Sci. U. S. A.* 105, 1786–1793. doi: 10.1073/pnas.0705414105

Levene, M., and Conversi, D. (2014). Subsistence societies, globalisation, climate change and genocide: discourses of vulnerability and resilience. *Int. J. Hum. Rights*. 18, 281–297. doi: 10.1080/13642987.2014.914702

Li, M., Wiedmann, T., Fang, K., and Hadjikakou, M. (2021). The role of planetary boundaries in assessing absolute environmental sustainability across scales. *Environ. Int.* 152, 106475. doi: 10.1016/j.envint.2021.106475

Lin, X., Yang, H., Wu, Y., Zheng, X., Xie, L., Shen, Z., et al. (2021). Research on international cooperative governance of the COVID-19. *Front. Public Health* 9, 566499. doi: 10.3389/fpubh.2021.566499

Link, P. M., Böhner, J., Held, H., and Scheffran, J. (2018). Energy landscapes. *Bull. Am. Meteorol. Soc.* 99, ES71–ES73. doi: 10.1175/BAMS-D-17-0295.1

Lorek, S., and Spangenberg, J. H. (2013). Sustainable consumption within a sustainable economy – beyond green growth and green economies. *J. Clean. Prod.* 63, 33–44. doi: 10.1016/j.jclepro.2013.08.045

Lüthje, C., Schäfer, M., and Scheffran, J. (2011). Limits to the Anthropocene. What are the challenges and boundaries of science for the post-normal age? EGU General Assembly 2011. *Geophys. Res.* 13, 2011–11795.

Maas, A., and Scheffran, J. (2012). Climate conflicts 2.0? Climate engineering as a challenge for international peace and security. *Sicherheit Frieden* 30, 193–200. doi: 10.5771/0175-274x-2012-4-193

MacGregor, D. (2021). *America's Coming War with China, in: The American Conservative (June 8)*. Available online at: https://www.theamericanconservative.com/articles/americas-coming-war-with-china (accessed May 23, 2023).

Mach, K. J., Kraan, C. M., Adger, N., Buhaug, H., Burke, M., Fearon, J. D., et al. (2019). Climate as a risk factor for armed conflict. *Nature* 571, 193–197. doi: 10.1038/s41586-019-1300-6

McNeill, J. R., and Engelke, P. (2016). *The Great Acceleration: An Environmental History of the Anthropocene since 1945*, 016: Pennsylvania: University of Pennsylvania Press; Cambridge, MA, Harvard University Press. University of Pennsylvania Press/Harvard University Press. doi: 10.2307/j.ctvjf9wcc

Meadows, D. H., Meadows, D., Randers, J., and Behrens, W. W. I. I. I. (1972). *The Limits to Growth.* A Report for the Club of Rome. New York, NY: Universe.

Mearsheimer, J. J. (2014). Why the Ukraine crisis is the west's fault: the liberal delusions that provoked putin. *Foreign Affairs* 1–12.

Menon, R. (2023). *An Age of Crises: Prospects for Inequality and Division*. Pathfinders Report. New York, NY: Center on International Cooperation.

Menzel, U. (2015). *Die Ordnung der Welt*. Berlin: Beck.

Meyer, P. (2020). *Arms Control in Outer Space: Mission Impossible or Unrealized Potential?* Calgary, AB: Canadian Global Affairs Institute.

Milkoreit, M., Hodbod, J., Baggio, J., et al. (2018). Defining tipping points for social-ecological systems scholarship – an interdisciplinary literature review. *Environ. Res. Lett.* 13: 1–12. doi: 10.1088/1748-9326/aaaa75

Morfi, C., Nilsson, J., Hakelius, K., and Karantininis, K. (2021). Social networks and member participation in cooperative governance. *Agribusiness* 37, 264–285. doi: 10.1002/agr.21660

Morris, I. (2010). *Why the West Rules – For Now: The Patterns of History, and What They Reveal About the Future*. London: Macmillan.

Murphy, T. W. (2022). Limits to economic growth. *Nat. Phys.* 18, 844–847. doi: 10.1038/s41567-022-01652-6

Nadiruzzaman, M., Scheffran, J., Shewly, H. J., and Kley, S. (2022). Conflict-sensitive climate change adaptation: a review. *Sustainability* 14, 8060. doi: 10.3390/su14138060

Oels, A. (2012). "From 'securitization' of climate change to 'climatization' of the security field: comparing three theoretical perspectives." in *Climate Change, Human Security and Violent Conflict*, eds J. Scheffran, M. Brzoska, H. G. Brauch, P. Link, and J. Schilling (Berlin, Heidelberg: Springer), 185–205. doi: 10.1007/978-3-642-28626-1_9

Olof Palme International Center (2022). *For Our Shared Future: Common Security 2022*. Stockholm: Olof Palme International Center, International Peace Bureau, International Trade Union Confederation.

Oomen, J. (2019). Anthropocenic limitations to climate engineering. *Humanities* 8, 12. doi: 10.3390/h8040186

Otto, I. M., Donges, J. F., Cremades, R., Bhowmik, A., Hewitt, R. J., Lucht, W., et al. (2020). Social tipping dynamics for stabilizing Earth's climate by 2050. *Proc. Natl. Acad. Sci. U. S. A.* 117, 52354–52365. doi: 10.1073/pnas.1900577117

Parkinson, S. (2021). *Under The Radar: The Carbon Footprint of Europe's Military Sectors. Conflict and Environment Observatory and Scientists for Global Responsibility*. Available online at: https://ceobs.org/wp-content/uploads/2021/02/Under-the-radar_the-carbon-footprint-of-the-EUs-military-sectors.pdf (accessed May 23, 2023).

Pastoors, D., Drees, L., Fickel, T., and Scheffran, J. (2022). "Frieden verbessert das Klima" – Zivile Konfliktbearbeitung als Beitrag zur sozial-ökologischen Transformation. *Zeitschrift für Außen- und Sicherheitspolitik* 15, 283–305. doi: 10.1007/s12399-022-00911-x

Pereira, P., Basic, F., Bogunovic, I., and Barcelo, D. (2022a). Russian-Ukrainian war impacts the total environment. *Sci. Total Environ.* 837, 155865. doi: 10.1016/j.scitotenv.2022.155865

Pereira, P., Zhao, W. W., Symochko, L., Inacio, M., Bogunovic, I., and Barcelo, D. (2022b). The Russian-Ukrainian armed conflict will push back the sustainable development goals. *Geogr. Sust.* 3, 277–287. doi: 10.1016/j.geosus.2022.09.003

Persson, L., Carney Almroth, B. M., Collins, C. D., Cornell, S., and de Wit, C. A., Diamond, et al. (2022). Outside the safe operating space of the planetary boundary for novel entities. *Environ. Sci. Technol.* 56, 1510–1521. doi: 10.1021/acs.est.1c04158

Piazza, A. (2021). Collective responsibility in the cooperative governance of climate change. *Sustainability* 13, 4363. doi: 10.3390/su13084363

Posocco, L., and Watson, I. (2023). Re-imagining the nation-state: an impetus from the pandemic. *Front. Sociol.* 8, 1086569. doi: 10.3389/fsoc.2023.1086569

Rajaeifar, M., Belcher, O., Parkinson, S., Neimark, B., Weir, D., Ashworth, K., et al. (2022). Decarbonize the military — mandate emissions reporting. *Nature* 611, 29–32. doi: 10.1038/d41586-022-03444-7

Redlawsk, D. P., Mattes, K., and Menco, K. S. (2022). "Fact or fiction influences on voter decision-making in a disinformation environment," in *Psychology of Democracy*, ed A. Weinberg (Newark, DE: University of Delaware), 229–249. doi: 10.1017/9781108774871.013

Reinhard, W. (2016). *Die Unterwerfung der Welt: Globalgeschichte der europäischen Expansion 1415–2015*. München: Beck. doi: 10.17104/9783406687198

Ribeiro Mendes, J. (2021). Does the sustainability of the anthropocene technosphere imply an existential risk for our species? Thinking with Peter Haff. *Soc. Sci.* 10, 314. doi: 10.3390/socsci10080314

Rittel, H., and Webber, M. (1973). Dilemmas in a general theory of planning. *Policy Sci.* 4, 155–169. doi: 10.1007/BF01405730

Rockström, J., Steffen, W., Noone, K., Persson, Å., and Chapin, F. S. (2009). A safe operating space for humanity. *Nature* 461, 472–475. doi: 10.1038/461472a

Ruhl, C., Hollis, D., Hoffman, W., and Maurer, T. (2020). *Cyberspace and Geopolitics: Assessing Global Cybersecurity Norm Processes at a Crossroads*. Working Paper, Washington, DC: Carnegie Endowment for International Peace.

Rutland, P. (2008). Russia as an energy superpower. *New Polit. Econ.* 13, 203–210. doi: 10.1080/13563460802018547

Rüttinger, L., Smith, D., Stang, G., Tänzler, D., and Vivekananda, J. (2015). *A New Climate for Peace: Taking Action on Climate and Fragility Risks*. Berlin: Adelphi, et al.

Sachs, J. D. (2020). *The Ages of Globalization: Geography, Technology, and Institutions*. New York, NY, Columbia University Press. doi: 10.7312/sach19374

Scartozzi, C. (2021). Reframing climate-induced socio-environmental conflicts. A systematic review. *Int. Stud. Rev.* 23, 1–30. doi: 10.1093/isr/viaa064

Scheffran, J. (1992). "Environmental applications of military information and communication technologies," in *Conversion - Opportunities for Development and Environment*, eds A. Brunn, L. Baehr, and H.J. Karpe (Berlin: Springer), 122–133. doi: 10.1007/978-3-642-95701-7_20

Scheffran, J. (2000). *Zurück zum Kalten Krieg? Russland und der US-Hegemonieanspruch*. Wissenschaft and Frieden 2–2000. Available online at: https://wissenschaft-und-frieden.de/artikel/zurueckzum-kalten-krieg/ (accessed May 23, 2023).

Scheffran, J. (2008). The complexity of security. *Complexity* 14, 13–21. doi: 10.1002/cplx.20242

Scheffran, J. (2015). *Technikkonflikte in der vernetzten Welt*. Wissenschaft and Frieden, 2/2015, 6-10.

Scheffran, J. (2016). "From a climate of complexity to sustainable peace: viability transformations and adaptive governance in the anthropocene," in *Handbook on Sustainability Transition and Sustainable Peace*, eds H. G., Brauch, Ú. Oswald Spring, J. Grin, and J. Scheffran, et al. (Cham: Springer), 305–347. doi: 10.1007/978-3-319-43884-9_13

Scheffran, J. (2017). "Der Nexus aus Migration, Klimawandel und Konflikten," in *Migration und Flucht zwischen Klimawandel und Konflikten. Hamburger Symposium Geographie*, ed J. Scheffran (Institute of Geography, University of Hamburg), 7–40.

Scheffran, J. (2020a). "Das Anthropozän und seine Grenzen: Überlegungen zu Klimawandel, Nachhaltigkeit und Coronakrise," in *Gesellschaftstheorie im Anthropozän*, eds F. Adloff and S. Neckel (Frankfurt: Campus), 257–279.

Scheffran, J. (2020b). "Climate extremes and conflict dynamics," in *Climate Extremes and Their Implications for Impact and Risk Assessment*, eds J. Sillmann, S. Sippel, and S. Russo (Amsterdam: Elsevier), 293–315. doi: 10.1016/B978-0-12-814895-2.00016-1

Scheffran, J. (2020c). *Geopolitik der Energiewende: Infrastrukturen für den nachhaltigen Frieden*. Wissenschaft and Frieden. 4/2020 (November), 38–40.

Scheffran, J. (2021). *Mythen der etablierten Sicherheitspolitik: "Der Westen kann die Weltprobleme lösen." Die Friedens-Warte 3-4/2021. S,* 205–227. doi: 10.35998/fw-2021-0012

Scheffran, J. (2022a). *Klimaschutz für den Frieden: Der Ukraine-Krieg und die planetaren Grenzen*. Blätter für deutsche und internationale Politik (April), 113–120.

Scheffran, J. (2022b). "Climate change: human security between conflict and cooperation," in *Encyclopedia of Violence, Peace and Conflict*, *3rd Edn*. (Amsterdam: Elsevier). doi: 10.1016/B978-0-12-820195-4.00087-X

Scheffran, J. (2023). "Welche Zeitenwende? Globale Risiken, Herausforderungen und Megatrends," in *Einführung in die Internationale Politik – Studienbuch*, ed M. Staack (Berlin; Boston, MA: Walter de Gruyter), 3–26 doi: 10.1515/9783110722529-001

Scheffran, J., Brzoska, M., Kominek, J., Link, P. M., and Schilling, J. (2012). Climate change and violent conflict. *Science.* 336, 869–871. doi: 10.1126/science.1221339

Scheffran, J., and Cannaday, T. (2013). "Resistance to Climate Change Policies: The Conflict Potential of Non-Fossil Energy Paths and Climate Engineering," in *Global Environmental Change: New Drivers for Resistance, Crime and Terrorism?*, eds B. von Balazs, C. Burnley, I. Comardicea, A. Maas, and R. Roffey (Baden-Baden: Nomos).

Scheffran, J., and Schürmann, E. (2020). Viable World - Zusammenleben im Gemeinsamen Haus der Erde. *Blickpunkt Zukunft* 69, S. 2–8.

Scholz, O. (2023). The global zeitenwende: how to avoid a new cold war in a multipolar era. *Foreign Affairs* 102, 22–38.

Schröder, U. (2022). Zeitenwende. *IPG-J.* Available online at: https://www.ipg-journal.de/rubriken/aussen-undsicherheitspolitik/artikel/zeitenwende-1-5797 (accessed May 23, 2023).

Shumilova, O., Tockner, K., Sukhodolov, A., Khilchevskyi, V., De Meester, L., Stepanenko, S., et al. (2023). Impact of the Russia–Ukraine armed conflict on water resources and water infrastructure. *Nat. Sust.* 12, 578–586. doi: 10.1038/s41893-023-01068-x

Simon, Z. B. (2020). The limits of Anthropocene narratives. *Eur. J. Soc. Theory* 23, 184–199. doi: 10.1177/1368431018799256

SIPRI (2023). *Trends in World Military expenditure, 2022.* Factsheet: Stockholm International Peace Research Institute.

Spangenberg, J. H. (2002). Environmental space and the prism of sustainability: frameworks for indicators measuring sustainable development. *Ecol. Indic.* 2, 295–309. doi: 10.1016/S1470-160X(02)00065-1

Spangenberg, J. H., and Kurz, R. (2023). Epochal turns. Uncomfortable insights, uncertain outlooks. *Sust. Dev.* 16. doi: 10.1002/sd.2512

Spicer, N., Agyepong, I., Ottersen, T., et al. (2020). 'It's far too complicated': why fragmentation persists in global health. *Global. Health* 16, 1–13. doi: 10.1186/s12992-020-00592-1

Steffen, W., Rockström, J., Richardson, K., Lenton, T. M., Folke, C., Liverman, D., et al. (2018). Trajectories of the earth system in the anthropocene. *Proc. Natl. Acad. Sci. U. S. A.* 115, 8252–8259. doi: 10.1073/pnas.1810141115

Stephens, J. C. (2019). Energy democracy: redistributing power to the people through renewable transformation. *Environment* 61, 4–13. doi: 10.1080/00139157.2019.1564212

Sterner, T., Barbier, E. B., Bateman, I., van den Bijgaart, I., Crepin, A. S., Edenhofer, O., et al. (2019). Policy design for the anthropocene. *Nat. Sust.* 2, 14–21. doi: 10.1038/s41893-018-0194-x

Sun, W. W., Liu, L. J., Chen, X. J., Szolnoki, A., and Vasconcelos, V. V. (2021). Combination of institutional incentives for cooperative governance of risky commons. *Iscience* 24, 102844. doi: 10.1016/j.isci.2021.102844

Swain, A., and Öjendal, J., eds. (2018). *Routledge Handbook of Environmental Conflict and Peacebuilding.* Abingdon, VA: Routledge. doi: 10.4324/9781315473772

Taylor, K. B. (2020). The passing of western civilization. *Futures* 122, 102582. doi: 10.1016/j.futures.2020.102582

Tilley, H. (2014). Racial science, geopolitics, and empires: paradoxes of power. *Isis* 105, 773–781. doi: 10.1086/679424

Tollefson, J. (2022). What the war in Ukraine means for energy, climate and food. *Nature* 604, 232–233. doi: 10.1038/d41586-022-00969-9

UN (1991). *Potential Uses of Military-Related Resources for Protection of the Environment.* Report of the Secretary General. New York, NY: Office for Disarmament Affairs.

UNEP (2019). *Global Environment Outlook (GEO-6) – Healthy Planet, Healthy People.* Cambridge: United Nations Environment Programme. doi: 10.1017/9781108627146

UNEP (2021). *Making Peace With Nature: A Scientific Blueprint to Tackle the Climate, Biodiversity and Pollution Emergencies.* United Nations Environment Programme, Nairobi. Available online at: https://www.unep.org/resources/making-peace-nature (accessed May 23, 2023).

UNGA (2015). *Transforming Our World: The 2030 Agenda for Sustainable Development.* Resolution adopted by the General Assembly on 25 September 2015 (A/RES/70/L.1).

Valladares, F., Magro, S., and Martin-Fores, I. (2019). Anthropocene, the challenge for homo sapiens to set its own limits. *Cuadernos Invest. Geogr.* 45, 33–59. doi: 10.18172/cig.3681

van Schaik, L., Laboué, K., Ramnath, A., and van der Meer, D. (2022). *Clean Military Power in the Age of Climate Change.* Expert Group of the International Military Council on Climate and Security, Center for Climate and Security (June).

Vasconcelos, V. V., Santos, F. C., and Pacheco, J. M. (2013). A bottom-up institutional approach to cooperative governance of risky commons. *Nat. Clim. Change* 3, 797–801. doi: 10.1038/nclimate1927

Vasquez, J. A., Diehl, P. F., Flint, C., Scheffran, J., Chi, S.-H., and Rider, T. J. (2011). The conflictspace of cataclysm: the international system and the spread of war 1914-1917. *Foreign Policy Anal.* 7, 143–168. doi: 10.1111/j.1743-8594.2011.00128.x

Vaugirard, V. (2007). Financial instability, political crises and contagion. *Dans Rech. Écon. Louvain* 73, 347–367. doi: 10.3917/rel.734.0347

Vinke, K., Gabrysch, S., Paoletti, E., Rockström, J., and Schellnhuber, H. J. (2020). Corona and the climate: a comparison of two emergencies. *Glob. Sust.* 3, e25. doi: 10.1017/sus.2020.20

von Uexkull, N., and Buhaug, H. (2021). Security implications of climate change: a decade of scientific progress. *J. Peace Res.* 58, 3–17. doi: 10.1177/0022343320984210

von Weizsäcker, E. U., and Wijkman, A. (2018). *Come On: Capitalism, Short-termism, Population and the Destruction of the Planet. A Report to the Club of Rome.* New York, NY: Springer. doi: 10.1007/978-1-4939-7419-1

von Weizsäcker, E. U., Young, O. R., Finger, M., and Beisheim, M. (2005). *Limits To Privatization – How to Avoid Too Much of a Good Thing. A Report to the Club of Rome, Earthscan*, 79–83.

Walker, J., and Johnson, M. (2018). On mineral sovereignty: towards a political theory of geological power. *Energy Res. Soc. Sci.* 45, 56–66. doi: 10.1016/j.erss.2018.07.005

White House (2015). *Findings from Select Federal Reports: The National Security Implications of Climate Change.* The White House.

Zuboff, S. (2019). *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power.* London: Profile Books.

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