Land Use, Sustainability, and Democratic Backsliding

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19 June, 2025

This paper is a non-peer reviewed preprint submitted to EarthArXiv.

Citation:
Meyfroidt P. (2025) Land Use, Sustainability, and Democratic Backsliding. Preprint, *EarthArXiv*

Fediverse handle: https://fediscience.org/@pmeyfroidt

Team website: https://landsystems-lab.earth/

Abstract

Land use and land systems, i.e. how human societies manage and interact with land through social-ecological systems, are at the core of sustainability issues. Democratic backsliding, i.e. the decline or degradation of the institutions and social norms that sustain democratic societies, is a widespread and impactful trend, with strong but understudied two-ways linkages with land use dynamics.

From protests instrumentalized by the far right against agricultural, nature restoration and land management policies, to regimes rejecting democracy and furthering extractivist economies based on mining, logging and large-scale investments, to right-wing populist discourses and movements blending denial of sustainability issues and nationalism, or authoritarian regimes spearheading tropical deforestation, the articulation between democratic backsliding and land use unsustainability is a massive challenge for contemporary societies and nature. Novel and robust scientific knowledge on these linkages is crucial to unlock this feedback loop and identify pathways to reconcile land use sustainability and democracy.

In this paper, I argue that we need key contributions to understanding the linkages between these issues, with (i) explicit articulation and embedding of democratic backsliding concerns and knowledge within land system and sustainability science – moving beyond a focus of democratic backsliding research on social, economic and political aspects, and beyond a focus of sustainability science on policy rather than politics – ; (ii) spatial, quantitative causal analyses of linkages between multiple forms of democratic backsliding and land use changes and related environmental impacts – moving beyond mostly qualitative, political analyses – ; (iii) syntheses and theory building on these two-way interactions.

Introduction

Land use and land systems, i.e. how human societies manage and interact with land through social-ecological systems, are at the core of sustainability issues. Democratic backsliding, i.e. the decline or degradation of the institutions and social norms that sustain democratic societies, is a widespread and impactful trend, with strong but understudied two-ways linkages with land use dynamics. In this paper, I argue that addressing these two issues requires enhanced efforts towards understanding the linkages between these issues, with (i) explicit articulation and embedding of democratic backsliding concerns and knowledge within land system and sustainability science – moving beyond a focus of democratic backsliding research on social, economic and political aspects, and beyond a focus of sustainability science on policy rather than politics – ; (ii) spatial, quantitative causal analyses of linkages between multiple forms of democratic backsliding and land use changes and related environmental impacts – moving beyond mostly qualitative, political analyses – ; (iii) syntheses and theory building on these two-way interactions.

The paper starts by a presentation of the two core issues – land use and sustainability on the one hand, and democratic backsliding on the other hand –, and their interlinkages. I then provide four examples of specific land use issues with crucial linkages with democratic backsliding across different regions, i.e. (i) deforestation and environmental policy dismantling; (ii) extractive frontiers; (iii) interventions to improve the sustainability of farming: restoration, pollution control; (iv) large-scale climate interventions including mining, renewable energy projects, and afforestation. From this, I extract four key takeaway points and four research questions that shape an emerging research agenda, and point to the empirical resources that exist to address these questions.

Land use, land systems and sustainability

Land use, including agriculture, forestry, mining, urbanisation, conservation activities, and others, is at the nexus of major sustainability issues (1). Land use is crucial to satisfy human demands and address socio-economic issues including food provision and security, provision of materials, shelter, and water, poverty alleviation – with over 26% of employment globally being in the agricultural sector (ILO) –, and energy transitions (2). Land is also the focus of crucial meanings and values for societies (1, 3). Yet, land use and its changes including deforestation (4), agricultural expansion and intensification, is also a major driver of global environmental change. Land use represents ~25% of global greenhouse gas emissions (5) – with the overall food system emissions reaching ~35% (6) –, and is the single main driver of biodiversity loss (7, 8). Further, land use is at the core of most of the environmental indicators identified as planetary boundaries (9), i.e. biogeochemical flows of nitrogen and phosphorus, anthropogenic water withdrawal (>70% being for agriculture (WB)), and aerosol air pollution in many countries. Steering land systems, i.e. the social-ecological systems in which human societies and nature interact through land use, and their pathways of change, is thus one of the most powerful levers to address sustainability issues. Understanding these pathways and levers is the focus of land system science (10).

Over 75% of the ice-free land surface of the planet is already converted or transformed by land use and management (11, 12). Pressures on land increase due to (i) looming competing demands – such as for feeding a growing and more affluent population, pulling carbon out of the atmosphere, and conserving, restoring and rewilding land and nature to halt the biodiversity crisis –, as well as (ii) the increasingly manifest impacts of global and local environmental changes – such as heat waves, floods, and soil degradation –, and (iii) the sense of urgency to push policy responses to these issues (1, 11). These pressures combine into growing constraints for land users, such as farmers and foresters, but also societies more broadly which depend on the products and services from land.

These pressures, if not addressed equitably and under the instrumentalization of special interest groups, risk creating social discontent and distrust towards governing institutions and other actors framed as responsible for the growing constraints on land use, such as the media and the scientific

world. This discontent, in turn, might hinder the elaboration of democratic consensus around solutions to sustainability issues.

Democratic backsliding

Concept and variants. Land use pressure coincides with another key challenge that affects many societies worldwide: Democratic backsliding. Democracy is a multiform and contested notion, and thus also democratic backsliding (13–15). Democratic backsliding has been defined as *"the state-led debilitation or elimination of any of the political institutions that sustain an existing democracy"* (16) or *"a deterioration of qualities associated with democratic governance"* (17). Although some authors include outright democratic breakdown in this term (16), in general the term connotes more gradual changes and weakening of democratic institutions (16, 17). A narrow view on democratic backsliding focuses on procedural democracy, i.e. elections (18), while broader views of substantive democracy also include formal state institutions including parliamentary, executive or judicial ones, the rule of law, as well as checks on executive power and protections of civil liberties, levels of transparency and corruption, and the broadest view also apprehends changes in media and civil society activity, social norms and beliefs, and deterioration of interpersonal relations (18–20). A fully unambiguous definition of democratic backsliding would require identifying what institutions or norms strictly define a democracy, which remains debated. Therefore, adequately conceptualizing democratic backsliding requires to combine on the one hand a perspective based on a set of criteria with, on the other hand, a perspective based on an "immanent critique", i.e. to assess backsliding against the political regime's stated norms and goals (20).

The related terms of *democratic erosion*, *regression* or *recession* put a focus on the intentionality of the "eroding agent" (14, 21) or record the decline in the number of democracies based on certain criteria (22). Other approaches conceptualize these processes not from their point of departure, i.e. democracy, but through their direction, referring to *illiberal democracy* (23) or *illiberalism* (24), as regimes that purport to be democratic but without safeguards (25), *autocratization*, as a "process of regime change towards autocracy that makes the exercise of political power more arbitrary and repressive and that restricts the space for public contestation and political participation in the process of government selection" (13, 26, 27), *authoritarianism*, or *populism* (28). Populism is a complex notion (29), but can be described as an ideology that (i) considers society to be separated between the "people" and an antagonist group (i.e. the corrupt elite, foreigners,...), and (ii) which considers that this "people" expresses a single homogenous will that should drive political decisions (30). *Authoritarian populism* is "a political perspective and hybrid set of practices by which a leader or party seeks unchecked political power through emotional appeals to the defense of "the people," land, and territory against an external enemy" (31, 32). Authoritarian populism can be left-wing as well as right-wing, but contemporary right-wing antidemocratic forces appear more prominent worldwide (15, 21, 33, 34), hence I will focus more on these, though noting that left-wing authoritarian populism is important in some regions e.g. Latin America (35). A broad umbrella term for such right-wing movements is the *far right*, which includes the *extreme right* that rejects democracy all by itself, and the *radical right* which opposes liberal democracy but accepts elections (36, 37). Core ideological commitments of the far right include nativism, authoritarianism, and, in its radical right variant, populism (38, 39). Further related notions include *alt-right*, *ultranationalism*, and in the extreme, *(neo-)fascism* and *totalitarianism*.

Democratic backsliding in the broad sense is also associated with societal changes regarding the status of knowledge, and the prominence of rationality and emotions (40). Authoritarian populists typically play on generating or manipulating emotions such as fear (22), rejection and distrust of elites including scientists, scholars and mainstream media (41, 42), or even conspiracy theories and post-truth narratives (43). Yet, political ecologists draw attention to the need to maintain a recognition of diverse forms of knowledge, especially coming from marginalized communities, while challenging "alternative facts" (44).

Here, I use the term “democratic backsliding” as an umbrella for the various processes noted above, acknowledging that they bring crucial nuances that have to be disentangled in their relations with land use and sustainability (45). I propose a view of democratic backsliding that (i) focuses mainly on gradual changes in regimes considered as democracies; (ii) includes formal institutions but also social norms, beliefs and values; and (iii) acknowledges the interplay between, on the one hand, broadly accepted principles of democracy such as protection of basic civil rights, equal representation and rights of citizens, and the rule of law, and on the other hand, the internal critique of a political regime against its own stated objectives.

Empirical evidence. As the definition of democratic backsliding remains debated, the metrics and empirical evidence on it remains also unsettled, yet, there is broad converging evidence suggesting that this is a widespread phenomenon over recent years (Figure 1). Key evidence come from the V-Dem dataset that classifies political regimes over the world, and shows across time a "third wave of autocratization" (more countries undergoing autocratization than democratization) that may have begun as early as the mid-1990s (27, 46, 47). Another major dataset, the Bertelsmann Stiftung's Transformation Index (BTI), shows a widely spread trend of democratic backsliding since the late 2000s (48, 49). Other datasets such as Freedom House, or the PopuList for Europe, show broadly the same pattern, though with nuances (22, 34, 50). Evidence on values and social norms about democracy, such as from the World Values Survey, show more nuanced patterns of articulations between values and political regimes (51).

Causes and processes. A comprehensive review on the causes and processes of democratic backsliding is beyond the scope of this paper, but it is important to note that multiple works have investigated the causes and processes through which democratic backsliding unfolds. Six broad families of theoretical explanations emphasize political agency, political culture, political institutions, political economy, social structure and political coalitions, and international actors (17). Each brings valuable insights but is also insufficient. Several key processes linked to democratic backsliding are executive aggrandizement, where executives progressively overtake the other state branches and dismantle checks to executive powers; and harassment of citizens and manipulation of elections (16). Further works distinguish rights-suspending versus rights-obstructing processes (20), and highlight typical sequences of actions or events through which democratic backsliding unfolds (14, 22).

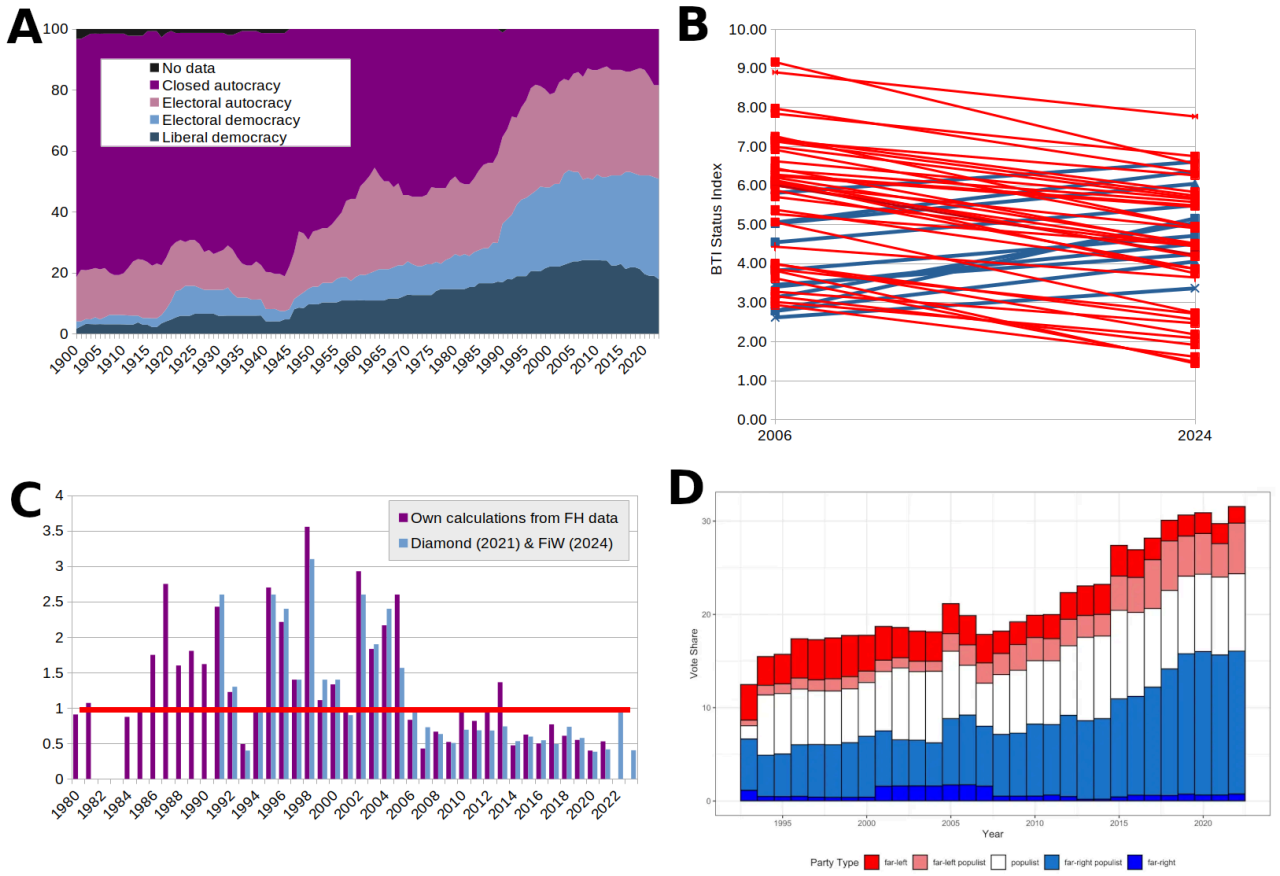

Figure 1. Selected evidence of widespread democratic backsliding.

A. Varieties of democracies (V-DEM) dataset, showing decline in liberal democracies and rise of autocracies since the mid-2000s. (Data: (46) *https://www.v-dem.net/). B. Bertelsmann Stiftung's Transformation Index, identifying 35 countries with significant decline in democracy status over 2006-2024 (red), versus 11 countries with significant improvements (blue)* (49) *https://atlas.bti-project.org/1*2024*TS:MIX:DOA*CAT*2010:0*salience:SD1 . C. Ratio of countries' gains to declines in freedom, with the red line indicating 1, i.e. as many countries gain and lose freedoms during that year, showing a reversal to predominant losses in the mid-2000s, Data from Freedom House and* (22) *https://freedomhouse.org/countries/freedom-world/scores . D. Percentage of extreme / populist (total) and far right (blue) vote in Europe over 1995-2020, reproduced from* (34, 50).

Linkages between land use and sustainability, and democratic backsliding.

From protests instrumentalized by the far right in Europe against agricultural, nature restoration and land management policies, to Sahelian, Central or Southern African regimes rejecting democracy and furthering extractivist economies based on mining, logging and large-scale investments, to right-wing populist discourses and movements in North America blending denial of sustainability issues and nationalism, or authoritarian regimes spearheading tropical deforestation in South America or South Asia, the articulation between democratic backsliding and land use unsustainability is a massive challenge for contemporary societies and nature.

The relations between the multiple processes of democratic backsliding and land use and sustainability are complex and go in several directions. These relations operate through ideologies, worldviews and values, as well as through concrete decisions and policies, and then behavioral,

land use and environmental changes, and feedback loops (52) (Figure 2). Studies have mainly explored the relations of democratic backsliding with general views on “nature” as well as with more concrete climate and energy policies. The literature specifically linking democratic backsliding to land use is scarce. In the abstracts for the 2024 Global Land Programme Open Science Meeting, the main scientific conference on land use, <1% of the abstracts mention any word associated with democratic backsliding, compared to ~14% with "politic*", and >50% with "policy" or "policies" (SI text).

Ideologies, discourses, representations. Tracing the roots of far-right antidemocratic ideologies into conservatism allows identifying key features of how major democratic backsliding movements relate to the environment as well as land use (39). Beyond general anti-regulations and anti-science inclinations, Bryant and Farrell (39) identify three core “cultural commitments” related to the environment: *naturalism* – i.e., the belief that there is a natural order that humans ought to follow and to take as a model for the social world and which justifies hierarchies including gender or racial inequality, and authoritarianism –, *organicism* – i.e., the vision of society as a functional organism (a nation or ethnic group) and of individuals as being components of this unified ecosystem, which have to adhere to social order to ensure the collective health of the group as a primary moral good –, and *pastoralism* (or *agrarianism*) – i.e. a moral system that puts a high value on locally-rooted, rural and agrarian ways of life against a global-cosmopolitan, urban one. Another important ideology of many authoritarian populist movements is *extractivism* – i.e. a vision of development that relies on activities which remove large quantities of natural resources that are not or minimally processed, largely for export (53), typically with strong power and distributional inequities, and disregard for the environmental and social impacts and the rapid exhaustion of the resource (54).

Among sustainability issues, climate change is probably the most explored in its relation with democratic backsliding ideologies. Far-right actors tend to be skeptical towards scientific evidence on climate change – regarding its existence, causes, impacts, or appropriate responses (55), and this generally translates into opposition to policies aiming at reducing fossil fuel consumption and greenhouse gas emissions and at transitioning towards renewable energy systems (56, 57). Yet, the pattern is complex. Populist ideologies can lend to either anti- or pro-environment positions (58, 59) and far right movements can strategically adjust their discourses to instrumentalize climate and environmental issues as these are often considered as secondary issues (60, 61). Ideologically, naturalist and pastoralist ideas provide roots on which far right, authoritarian and populist movements can build discourses claiming strong concerns for environmental issues (39, 62–64). These discourses are often blended with nativist and anti-immigration stances, concerns toward overpopulation and the maintenance of traditional lifestyles and landscapes (64), or express an instrumental and extractivist vision of nature (65). These can turn into forms of “environmental authoritarianism” (66), or, as a similar notion, “ecofascism” (64). Further, these movements also instrumentalize rural and environmental issues. Far right and conservative movements can foster forms of "energy populism" by playing on the sense of dispossession and discontent of local communities in marginalized territories affected by green energy projects (67). Beyond climate and broad environmental concerns, empirical analyses focusing specifically on land use are thus scarce and needed.

Impacts of democratic backsliding on land use. Multiple studies have shed light on specific aspects of this relationship for environmental issues in general (68), yet a comprehensive picture focusing on land use remains lacking. Right-wing populist movements often struggle against energy transition policies and practices, including by relying on "post-truth politics" (69). Overall, democracy tends to be associated with higher achievements in normatively desirable environmental outcomes (70). Populist leadership, across both democratic and authoritarian regimes, is associated with lower environmental performance on per capita CO2 emissions (71, 72). Cross-country studies have used measures of democracy to assess its impacts on environmental indicators such as air pollution, with mixed results (e.g. (73)). Liberal democracies appear to perform better than autocratic regimes on the preservation and building of human and natural capital (74).

On land use, political ecology studies investigate power and politics around land using mainly qualitative methods and discourse analyses. These studies show how authoritarian populists regimes often support extractivists modes of development in rural areas, with weak environmental regulations and the creation of “sacrifice zones” where socio-ecological degradation follows resource extraction to support national growth and state power consolidation (31, 32). In the US and UK, the reliance of right-wing populism on agrarianism led to a politicization of farming, land use and agro-food issues, which in turn led to dynamics of policy changes (75). Beyond, a large set of research assesses the impacts of multiple (tenure, environmental, zoning…) policies on land use and sustainability using spatial analyses, quantitative, statistical and mixed methods approaches (e.g., (76, 77)). But very few studies use these approaches for investigating how politics, more broadly than policies, affect land use, and even less the politics of democratic backsliding. For example, democratization was shown to increase the surface dedicated to protected areas in the medium/long-run (78), but contested election cycles were associated with higher deforestation (79, 80). Overall, the specificities of democratic backsliding impacts on land use remain largely unexplored.

Impacts of land use on democratic backsliding. In turn, land use and associated socio-environmental changes can influence people’s ideologies, values and their behaviors. Three main ways can be identified, but knowledge on each remains thin:

(i) Pressures from sustainability issues themselves, such as impacts of climate change or other forms of environmental degradation, which predominantly affect people in rural areas, land users such as farmers, and people in low socio-economic conditions. Environmental change collides with further pressures from broader drivers linked to globalization, leading to rural decline, unemployment, outmigration, expansion of large agribusiness at the expense of family farming (81, 82), which all fuel resentment instrumentalized by right-wing populists (32, 83–87).

(ii) Sustainability policies in response to these issues, which can impose constraints and costs on populations, often in ways perceived as unequal or inequitable (88, 89). Recent farmers’ protests and backlash against EU Green Deal policies have spurred support and were supported by far right ideas and parties (90). Meat curtailment policies in the Netherlands were shown to trigger backlash rooted in populist discourses, such as anti-elitism, interlocked with carnism (meat is normal) and neoliberalism (freedom of choice) ideas (91). Consequences of these policies which can be considered as “success” in environmental terms, such as rewilding and the recovery of wild fauna populations, can also be instrumentalized to trigger reactionary backlashes, e.g. as politicization of livestock attacks by recovering wolf populations increased far-right voting in Germany (92).

(iii) Conversely, the land use outcomes of authoritarian, populist and extractivist policies can also fuel discontent and ideologies that contribute to democratic erosion or backsliding, e.g. mineral resource extraction in Africa has been shown to enhance the salience of ethnic identities (93).

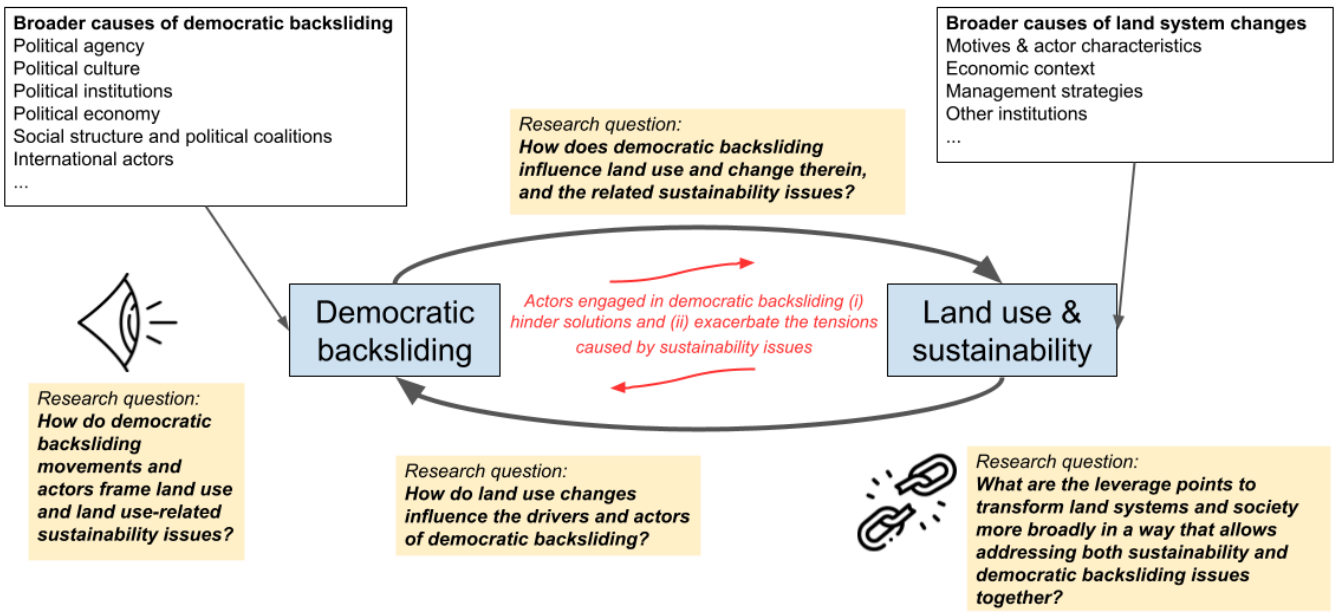

Figure 2. A framework and research agenda on two-ways linkages between democratic backsliding and land use and sustainability.

Prominent cases of linkages

Deforestation and environmental policy dismantling. Tropical deforestation is a major process of land use and cover change, with massive environmental and social impacts (4). Brazil under the authoritarian populist government of President Bolsonaro (2019-2022) is perhaps the best studied case linking democratic backsliding to land use and related sustainability changes, in particular deforestation. Amidst a general trend of policy dismantling (94), specific efforts were focusing on policies regarding rural development, land titling, environment, and protection of indigenous peoples (95). Although sustainability efforts such as anti-deforestation policies were already weakening before Bolsonaro's tenure, that trend accelerated dramatically during it and were replaced by extractivist policies (96, 97). This led to a massive increase in violence, land dispossession, human rights violations, and deforestation (98, 99). In post Bolsonaro's Brazil, reactionary stakeholders such as industrial soy farmers have developed a strong anti-environmental stance blending conspiracy theories, nationalism, libertarian and extractivist values (100).

North America provides further examples of environmental policy dismantling. Far right movements are rising in the United States, through extremism and terrorist attacks (101) as well as political forces (102), with linkages to land use and sustainability. Even though it also appeals to urban citizens, right-wing populism is rooted in certain rural visions that promote agrarianism and individual control over rural land, rejecting environmental and land use regulations and public control of land (84). Accordingly, conservative regimes were shown to induce more legal changes to downgrade, downsize, or degazette protected areas that are vital tools for biodiversity conservation (103). Far Right racist ideologies also blend with discourses about the causes of wildfires, thereby influencing the solutions put forward to address this environmental issue (104).

Extractive frontiers. Land use frontiers correspond to places with large and rapid land use changes, which includes deforestation frontiers but also others such as frontiers of conversion of traditional or smallholder land uses towards capitalized, commodity-oriented land uses (105). These may include various land uses such as large-scale agriculture, timber exploitation, or

mining. In Canada, political and political economy studies show how dynamics of land use expansion in northern frontiers (106) are embedded into discourses about natural resources and identity that are described as extractive populism (107) and settler colonialism (108, 109), as part of a broader populist trend (110) and linkages between fossil and extractive industries and far right movements (111). Discourses on extractivism have focused on energy and mining (112–114). Concerns about the availability of critical minerals for information technologies and the energy transition, especially in a context of defiance with China, are blending renewed extraction efforts with elements of nationalism and protectionism, including with agreements with the United States (115).

From the 1980s to the mid-2000s, Sub-Saharan African experienced a general trend towards democratization (116). Yet, since then, regimes have become increasingly autocratic and authoritarian in many countries, with situations ranging from term limit manipulation to outright military takeovers, in particular in regions such as West Africa and the Sahel (116). Autocratic and far right ideologies underlie both authoritarian regimes and terrorist groups, and these different actors instrumentalize concerns about climate change and grievances over access to natural resources to assert power (117, 118). Mineral resource extraction also reinforces the salience of ethnic identities especially among powerless and poor ethnic groups (93), which are often instrumentalized by autoritharian populist regimes.

Mozambique is another example. Mozambique has a multiparty electoral regime, but the state apparatus and economy is dominated by the single historical liberation party, with degradation of the democratic safeguards (including through threats, harassment and violence against the press, political opponents and civil society critics including academics) and increasing trends of authoritarian populism with right wing stance ongoing since the mid-2000s (V-DEM,(119, 120)), building on earlier trends of corruption and elite capture (121, 122). This trend is particularly affecting rural and farming contexts, in what has been described as “agrarian authoritarianism” (120, 123), characterized by a development model based on attracting foreign large-scale investments for resource extraction, including through deforestation, with little actual benefits for local communities (124, 125), and also fueling reactions including rebellion in the Northeast (126). The broad ideological, discursive and political linkages between democratic backsliding and agrarian, farming and extractivism issues in Mozambique have been analyzed in depth (119, 120, 127), but quantitative studies linking land use and environmental changes to agrarian authoritarianism remain lacking.

Interventions to improve the sustainability of farming: restoration, pollution control. Crucially, land system dynamics include not only land use and land cover conversions but also continuous changes in land management within certain land uses, for example changing the intensity of farming practices (128). With most of the earth’s land surface being already used by human societies, more and more interventions focus on reducing pollution and restoring biodiversity and ecosystem functions within managed lands, such as in Europe under the Green Deal[1]. Yet Europe is strongly affected by contemporary democratic backsliding (129), through multiple forms, from the rise of proper illiberal and authoritarian regimes (130) such as to different degrees in Hungary, Poland or Slovakia, to increasing support and spread of far right, populist and reactionary movements and ideas (34, 131), such as in the Netherlands, Belgium, France, Italy, Germany or Sweden. Multiple works have explored the discourses, positions and representations of nature and the environment in general in European illiberal, far right, authoritarian and populist movements (39, 59, 64, 65), as well as how these discourses translate into policy positioning towards specific environmental issues in particular climate and energy (58, 72). Yet, a systematic account focused on land use and land systems, in their multiple dimensions (including agricultural area and intensity changes, forestry, area-based conservation, extractive industries, urbanization) remains lacking. Rural and land use dynamics appear strongly interlinked with the democratic backsliding trend, with both “roots” – historical linkages between reactionary movements and rural areas – and “shoots” – such as recent backlashes against EU and national policy efforts regarding

[1] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

nature conservation and restoration, agricultural pollution reduction, mobility transition etc, coming from farmers, rural landowners and population, fueled and exploited by democratic backsliding movements (90). Case studies showed that rural land use histories have linkages with the prevalence or specific forms of populism and authoritarianism, with important heterogeneity among rural landscapes (85, 86).

Large-scale climate interventions including mining, renewable energy projects, and afforestation. To address the ongoing climate crisis, governments and private actors are increasingly developing and implementing large-scale land-based interventions including expansion of renewable energy (including electricity and bioenergy) and afforestation to store carbon. These interventions may increase the already strong land pressure in many places, and involve important issues of environmental and social justice, such as in India. Amidst a general trend of autocratization in South Asia (132), India under the BJP regime since 2014 has been described as a "hybrid regime", i.e., in between a full democracy and a full autocracy (133). Even though entrenched authoritarian features were pre-existing in India's democratic system (134), and democratic norms and institutions have not disappeared (135), the Modi government has substantially eroded the de facto protection of civil liberties and executive constraints, dismantled democratic institutions and functioning, and set up a system of harassment and persecution of political opponents, media, civil society organisations, and ethnic minorities (136, 137). A study showed evidence of electoral manipulation, in the form of targeted deletion of voter names and electoral discrimination against Muslims (138). This autocratization also shapes environmental governance, including in the land use and forest sector. On the one hand, the regime made notable efforts towards climate change mitigation and renewable energy transition (139). On the other hand, it also made consistent efforts to weaken environmental regulations, and remove safeguards to obtaining environmental permits and clearances for large-scale investments in land-related projects such as mining and infrastructure, as well as renewable energy projects (140, 141). Renewable energy projects are also embedded in the ethno-religious vision of the regime by serving as ways to promote Hindu populations against Muslims and further controlling the latter (139). Compensatory afforestation to offset the loss of forests through these projects has taken the form of large-scale monoculture plantations on so-called "degraded forests", even furthering the loss of access to forest resources for local communities (141). The authoritarianism of the regime also manifested through the policing and criminalization of environmental dissent and activism, the undermining of protection and access to forest resources by vulnerable and already marginalized local and indigenous communities (141, 142).

A research agenda on land use, sustainability and democratic backsliding

Key takeaways and research questions. This review brings four main takeaways. First, sustainability of land use and democratic backsliding are two major societal and scientific concerns. Second, multiple lines of evidence suggest that there are linkages between these two issues, but these links remain thinly understood and a comprehensive picture remains lacking. Third, the potential causal relationships appear to go both ways, as (i) processes of democratic backsliding hinder solutions and exacerbate the tensions caused by land use and sustainability issues, and (ii) conversely pressures on land and efforts to address sustainability issues linked to land use may fuel democratic backsliding. Fourth, beyond this general insight, the understanding of and evidence on these causal relations remains very limited. Complexities include (i) the mutual causation relations produce endogeneity issues that are methodologically challenging to address, and (ii) both phenomena are also influenced by other drivers. Most studies focus on qualitative analyses of discourses and political dynamics, but very little quantitative and causal studies link these with actual land use changes and the associated sustainability impacts.

These takeaways point to four general research questions, which could structure a research agenda to understand how societies can address sustainability issues in a context where

democracy is backsliding, taking land use and land systems as a focal case of interface between sustainability and democratic backsliding (Figure 2). First, how do democratic backsliding movements and actors frame land use and land use-related sustainability issues? Second, how does democratic backsliding influence land use and change therein, and the related sustainability issues? Third, conversely, how do land use changes influence the drivers and actors of democratic backsliding? Fourth, what are the leverage points to transform land systems and society more broadly in a way that allows addressing both sustainability and democratic backsliding issues together?

A land system approach to democratic backsliding. From the democratic backsliding perspective, discourses on "nature" in general or the environment have been well studied, but much less literature has focused specifically on land systems and land use policies (143). From the land use perspective, several studies have already started to explore how worldviews, values and cultural features of land users influence their land use decisions (52, 144, 145), as well as how to describe, measure and typologize distinct conceptions of conservation (146). Yet, no study has made explicit quantitative linkages between political opinions on the illiberal / democratic spectrum and land use practices.

Rich databases exist to assess quantitatively the linkages between democratic backsliding, land use policies, and land use change, including measures of (i) political regimes, parties and ideologies based on datasets including VDem, BTI, the Global Populism Database, the Polity Project, Manifesto Project, GPS, and Party Facts, as well as from the ELDAR project, (ii) agri-environmental policies from (147) database; (iii) land use change from multiple datasets including tree and forest cover change (GFC), cropland (GLAD) and pasture (Global Pasture Watch) expansion and contraction, mining ((148, 149), land use intensity data from FAOSTAT, and (iv) measures of key environmental impacts linked to land use, in particular vegetation carbon and biodiversity (150). For some critical regions, further datasets exist such as for Latin America where high quality land use (Mapbiomas) and democratic backsliding data (CHES-Latin America, (151) with data on party positioning on ideology and policy issues for 112 parties across 12 countries) exist and subnational analyses can be performed. In Europe, datasets cover voters' positioning across >63,000 EU electoral districts (152) (COMEPELDA, EUI, EU-NED, as well as party positioning on multiple issues including anti-elite rhetoric, immigration, and environmental policy (Chapel Hill Expert Survey (CHES), (153)), covering six waves for Europe (1999, 2002, 2006, 2010, 2014, and 2019), the PopuList database, and the EVS.

With these and other datasets, as well as case studies collecting primary data, further studies can combine (i) mapping land use changes that can be linked to democratic backsliding, and the key associated sustainability impacts with a focus on biodiversity, carbon, and food security, (ii) mapping indicators of democratic backsliding at different scales, and (iii) spatial analyses and statistical studies of the impacts of democratic backsliding on land use change and of the impacts of land use change on democratic backsliding. These works have to control for the structural factors generally known to influence land use, including motivations, and socio-economic profiles of the land managers, environmental and geographic features, economic and institutional structures (154–156), as well as factors influencing democratic backsliding (14, 17). A core challenge will be to address endogeneity issues from the mutual causation relations.

Conclusion: Reconciling land use sustainability and democratic resilience

We need a step-change in our understanding of the linkages between two of the most pressing societal issues of our times, i.e. land system sustainability, and democratic backsliding. This requires (i) explicit articulation and embedding of democratic backsliding concerns and knowledge within sustainability science – moving beyond a focus of democratic backsliding research on social, economic and political aspects, and beyond a focus of sustainability science on policy, rather than

political, issues, and (ii) spatial, quantitative analyses of linkages between land use changes and multiple forms of democratic backsliding – moving beyond mostly qualitative, political analyses.

Land system science can contribute to produce a general empirical and theoretical account of how democratic backsliding and land system dynamics and related sustainability issues mutually influence each other, identifying distinct configurations of relations between different land use and democratic backsliding processes through a middle-range, typological theory approach (105, 154, 157). From that, a critical task is to build a generalized understanding of what land system pathways can reconcile sustainability and democratic objectives, and what are the leverage points to transform land systems in such pathways. These pathways may build on both top-down theories identifying structural and functional explanations of "democratic resilience" (15, 19) as well as bottom-up dynamics inspired from the “emancipatory rural politics” vision (83). Identifying these pathways requires to disentangle concerns that have been blended into democratic backsliding discourses but which can, in principle, be addressed through an alternative political project (e.g., impacts of environmental change, risks linked to unjust sustainability transition) versus those that form the ideological core of democratic backsliding (nativism, authoritarian, populist ideologies), in order to allow developing discourses, policies and interventions that decouple these two sets of issues, i.e., are able to address the former without endorsing the latter, in an approach inspired from “concentric containment” (158). Overall, this research agenda can contribute to embedding the core issue of democracy into sustainability science, and to addressing the interlinked issues of democratic backsliding and land use unsustainability.

Acknowledgments

This paper is a product from the ERC AdG project 101198755 LUDEMO “Land use, Sustainability, and Democratic Backsliding”. The Author wants to warmly thank all the many people over the years with whom exchanges contributed to shaping this reflection. This work contributes to the Global Land Programme https://glp.earth/ .

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