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The agrarian question of climate change

Kasia Paprocki 

London School of Economics and Political Science, UK

James McCarthy

Clark University, USA

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Abstract

The agrarian question of the twenty-first century is the agrarian question of climate change. The classical agrarian question asked how capitalist development was reshaping fin de siècle agriculture and with what consequences. The answers often contradicted predictions, and thereby teleological notions of development. Today, we must ask how climate change adaptation and mitigation, alongside and through other ongoing processes of capitalist development, are reshaping agrarian lives, livelihoods, landscapes, and politics, and with what consequences. We argue that attention to the agrarian question is essential to understanding social, political, and economic transformation broadly in the time of climate change.

Keywords

adaptation, agrarian question, agriculture, climate change, mitigation

I Introduction

“We can now contemplate the end of most farming, the most destructive force ever to have been unleashed by humans,” declares British environmental journalist George Monbiot (2022: 231). His manifesto for addressing the contradictions between contemporary agriculture and environmental crises, *Regenesi*s, lays out a vision of a “Counter-Agricultural Revolution” dripping with disdain for both farmers and the people who support them. He writes, “bucolic nostalgia shuts down our moral imagination, unstrings our critical faculties, stops us from asking urgent and difficult questions. But at a time of global ecological catastrophe, we cannot afford this indulgence” (224).¹ Monbiot’s technoutopian vision, full of genetically engineered

microbial meat alternatives, is, unfortunately, all too representative of dominant visions of climate change adaptation and mitigation—visions that are already profoundly reshaping rural landscapes. Specifically, these popular and policy narratives about climate futures increasingly call into question the viability of specific forms of agriculture and of many agrarian communities, insisting that agrarian transformation and demise are necessary conditions of climatically viable futures. Others take a position almost exactly

Corresponding author:

Kasia Paprocki, Department of Geography and Environment,
The London School of Economics and Political Science, Houghton
Street, London WC2A 2AE, UK.Email: k.paprocki@lse.ac.uk

opposite Monbiot's, and argue that more small, biodiverse, agroecological farms are essential to solving the climate crisis. Either way, calls and strategies about how farms, farmers, and farming should be transformed in order to respond to climate change abound across the political and policy spectrum. Examples range from initiatives to make agriculture "climate-smart," to calls to abandon agriculture in some locations while intensifying it in others, to embraces of the outright displacement of agriculture and smallholders from purportedly "marginal" lands to make way for large new solar and wind energy projects and reduce carbon emissions. What this range of prescriptions makes plain is that the climate crisis is leading not to the end of agriculture but in fact to a heightened centrality of agrarian societies, relations, and landscapes in contemporary capitalism and the dynamics of climate change. Not only is agriculture not obsolete, as Monbiot charges: it is central to how we imagine our collective future in the time of climate change.

Such debates and prescriptions are deeply and inevitably shaped by historical patterns of development that far predate contemporary climate change (Gajjar et al., 2018; Paprocki, 2021). Indeed, for us they powerfully call to mind the debates around the classical agrarian question. It is striking how many of the claims, questions, and dynamics central to the classical agrarian question occupy center stage in current debates around climate-changed agrarian futures. Returning to the agrarian question can thus help us to illuminate the possibilities and limitations of dominant approaches to climate change adaptation and mitigation, even as we recognize the ways in which the climate crisis presents a genuinely new, different, and urgent set of challenges.

The classical agrarian question centered the social relations of agriculture in understanding the political economy of capitalist development. Its scholars in the later 19th and early 20th centuries asked how capitalist development was reshaping agricultural production and societies, and with what consequences. The answers ranged from the relatively empirical and economic—were farm sizes and exports increasing or not; where did rural people forced out of agriculture go—to the analytical, such as how agriculture's reliance upon natural conditions and

processes presented particular challenges to capitalist investors and particular opportunities for small family producers—to the political, regarding how rural producers undergoing processes of class formation or differentiation would position themselves within the rapidly shifting national political formations of the time. Then as now, many of these debates mixed positive and normative elements, asking not just whether farms *would* grow larger, more capital intensive, and more oriented toward intensive production and export of single crops, or smaller, more labor intensive, and structured around production and local consumption of diverse outputs, but whether they *ought* to do so. Through examination of these and other dimensions of the agrarian question, Marxist scholars of agrarian change demonstrated that the transformation of agriculture, and of the communities that practice it, is foundational to the development of capitalism, even as these transformations do not follow a linear pattern or teleology. The agrarian question has thus always been about far more than farming and farmers. It is about how the conditions of agrarian production fundamentally shape the trajectories of national and global development. That means it is also about the development of capitalism, its possible futures, and potential alternatives to it.

The agrarian question is thus far from only historical: the social and economic transitions now occurring in reaction to climate change make the dynamics it explores more salient than ever. Those dynamics—of how rural agrarian producers and systems are affected by large-scale changes originating largely outside their immediate area or control, and how they navigate those effects—offer not just an analogy but to some extent a direct precedent and earlier point in a continuous process, for understanding how capitalism-driven climate change is affecting agrarian producers in the present, and for how responses are proposed and navigated. Given that scholars spent decades working through answers to the original agrarian question, what they found provides a critically useful set of insights for thinking about transformations of the agrarian world and beyond in the climate-changed present and future.

We therefore must ask an updated version of the agrarian question for the 21st century: *how will*

efforts to mitigate and adapt to climate change reshape agrarian societies and landscapes, with what political implications, and how can the classical agrarian question help us to understand these dynamics? In this review article, we demonstrate how thinking with and through the classical agrarian question and its contemporary variants can offer new ways of understanding strategies for responding to climate change, their historical legacies, and potential political futures. In so doing, we seek to convince even readers with no implicit interest in peasants or agrarian communities that attention to the agrarian question is helpful, perhaps even essential, to understanding social, political, and economic transformation broadly in the time of climate change.

In establishing the context for this argument, we must begin by acknowledging two realities: that climate change and reactions to it are profoundly impacting agrarian environments and societies around the globe, and that capitalist development and climate change are inextricably linked. Even the briefest review of the most recent [IPCC reports \(2019, 2023\)](#) will confirm the first, although a vast academic literature elaborates upon it (see, e.g., [Sarr, 2012](#); [Zhao et al., 2017](#)): climate change is projected to have serious, direct impacts on agriculture and food security through increased temperatures, dramatic and changes in precipitation, changed growing seasons, and myriad other physical effects. The impacts on agrarian societies will be not “just” physical but social and economic as well, including calls to change agricultural practices and landscapes in the name of adaptation to and mitigation of climate change (see, e.g., [Borras et al., 2022](#); [Reisman and Fairbairn, 2021](#); [Rosa et al., 2021](#)). Regarding the second, there is an emerging consensus within geography and a growing swath of society that capitalist development is the most fundamental cause of climate change, and that the vast majority of contemporary responses to climate change are profoundly shaped by the overwhelmingly capitalist context in which they are developed ([Fraser, 2021](#); [Klein, 2015](#); [O’Brien and Leichenko, 2000](#); [Vergés, 2019](#)). Thus, just as we can no longer consider the heart of the agrarian question—the effects of ongoing capitalist development on agrarian change—without substantial attention to climate change, neither can

we adequately conceptualize the effects of climate change, including climate adaptation and mitigation strategies, on agrarian environments and societies without situating them within the context of contemporary capitalist development.

The paper proceeds as follows. After this introduction, we provide a necessarily brief review of the major contours of the classical agrarian question. We then draw out from those debates and from more recent, related literature the key points we want to bring to bear on consideration of current imbrications of climate change and agrarian futures. In the subsequent section, we examine how five key insights from the classical agrarian question help to clarify and illuminate contemporary changes in agrarian landscapes, focused broadly on changing social and material relations, their interconnections with broader social processes, and the political stakes of the ensuing agrarian transformations. We then conclude by summarizing the most critical takeaway points.

II Agrarian questions past and present

I The classical agrarian question

The classical agrarian question analyzed the development of capitalism within and through agrarian societies and, relatedly, the political potential of the peasantry. This early work has generally been understood to encompass the following interrelated questions: 1) how does capitalism penetrate agriculture and what are the implications for agrarian class structure? 2) How do these transformations in agrarian political economy fit within broader patterns of capitalist development? And 3) what do these transformations mean for the politics of the agrarian sector and broader political trajectories? Thus, while these questions center the significance of agrarian production, they have society-wide implications.

We will not provide here a comprehensive review of the literature and debates within the classical agrarian question or subsequent reconsiderations of it. Such a discussion would be a full article in itself and hence require far more space than we have here. It would also be redundant, in that many excellent such reviews already exist: for example,

Akram-Lodhi and Kay (2010a; 2010b), Amin (2017), Banerjee (2023), Edelman and Wolford (2017), Levien et al. (2018), Moyo and Yeros (2008), and Watts (2002). Rather, our purpose is to argue that many of the key findings and debates from that literature can give us new and productive insights into the drivers, dynamics, and stakes of agrarian change in the era of climate change, adaptation, and mitigation.

For now, then, suffice it to say that classical Marxist thinkers, including Marx himself and later Lenin, predicted that as capitalism developed, capitalist relations of production would take over the agricultural sector, leading to large capitalist farms employing wage labor and increasing levels of machinery outcompeting small producers, including peasants, and thus the eventual disappearance of the peasantry—as farmers, as land users, and as a class (Lenin, 1977 [1899]; Marx 1963 [1869], 1992 [1867]; Marx and Engels, 1978 [1988]). The latter might happen via simple displacement, or via a process of class differentiation and proletarianization, in which some peasants gradually became capitalists while the majority became wage laborers, on farms or elsewhere. Both Marx and Lenin saw this as a regrettable but necessary development: to resist or impede it would serve merely to slow progress along the road to socialism. Among other considerations, they expected that the capitalist transformation of agriculture would displace workers, making them available to join the urban and industrial proletariat, while also providing cheaper food for that proletariat, thereby subsidizing industrialization by effectively lowering the cost of labor power. As important, they saw the capitalist takeover of agriculture as critical to breaking the then-tremendous political and economic power of the rentier landlord class, which they viewed as vestigial and inherently reactionary. These basic insights—that what happens in the agricultural countryside plays an important role in what can happen in industry, cities, and politics—have informed many subsequent national development strategies.

As the 19th century drew to a close, these theoretical questions took on practical urgency as small farms in Europe increasingly faced direct competition from cheap grains imported from large, highly

productive, and often capitalist farms in the Americas and elsewhere. When the Marxist theorist Karl Kautsky wrote his seminal text, *The Agrarian Question* in 1899 (Kautsky, 1988 [1899]), it centered these questions about the transformation of agriculture in investigating potential trajectories toward socialism in Russia (and gave these debates their name). Proceeding from empirical research rather than deductive logic, Kautsky found that contrary to the predictions above, the Russian middle peasantry was in fact consolidating into a stable class that Lenin referred to as “propertied proletarians” (cited in Watts, 2002: 24), a finding later elaborated in great depth by Chayanov and others (Chayanov, 1986).

The reasons for that persistence of the peasantry are critical to the ongoing significance of the agrarian question. One was that the land- and nature-based qualities of agricultural production made it relatively unattractive to capitalists, who often preferred to stay at arms-length and have small producers bear the associated risks and uncertainties (Kautsky, 1988 [1899]; Little and Watts, 1994), or just invest in other sectors altogether. Another was the potential for self-exploitation on farms using family labor, including that of children: crudely, peasants could afford to produce and reproduce on-farm labor power more cheaply than even capitalists (Alavi and Shanin, 1988; Chayanov, 1986 [1966]). A third was what turned out to be the surprising difficulty of mechanizing many aspects of agricultural labor (Shattuck et al., 2023). A fourth was the remarkable strength and durability of many rural identities and attachments to the land, such that small producers would, in addition to self-exploiting and accepting lower material standards of living, take on both more debt and other, off-farm jobs—part-time, seasonally, and sometimes even elsewhere for years at a time—to subsidize and maintain their connection to the land (Edelman, 2005; Moore, 2005; Rigg et al., 2018). A subsequent century and more of scholarship has confirmed these findings over and over around the world, even amidst the myriad specificities of particular historical geographies and changing global contexts (for the second and fourth points, see, e.g., the editors’ introduction to and several contributions to Levien et al., 2018; see also Patnaik, 2012).

The political stakes of these unexpectedly complicated agrarian trajectories were high: far from being just narrowly “economic,” or solely about the fates of small agrarian producers, many saw entire national political trajectories, and even the possibility or success of revolution, resting on what happened with the peasantry (a question that became central to decolonization and Cold War geopolitics). Specifically, the question was often whether peasants and other small rural producers could and would ally themselves with socialist or communist movements and parties, or whether their deep attachments to existing structures and relations of production would cause them to be politically conservative, including allying with landlord classes seen by classical Marxists as inherently conservative. The answers were, of course, shaped but never entirely determined by class dynamics or other structural forces: diverse outcomes were possible, based in part on collective political strategy and action. This meant that the political implications of the very common resistance of agrarian producers and social structures to the prescriptions for particular forms of capitalist “development” pushed by capital, states, and theorists at any particular moment came to be understood as fundamental not only to the agrarian question but also to national-scale developmental and political trajectories (see [Borras et al., 2022](#); [Shattuck et al., 2023](#) for discussions and additional references). Kautsky was motivated precisely by this paradox, that agricultural producers were gaining political power just as agriculture’s economic significance was declining ([Watts, 1996](#)).

2 The agrarian question in an era of climate change

Having reviewed the fundamental tenets and insights of the classical agrarian question, we turn now toward consideration of the contemporary agrarian question in the context of climate change. Clearly, scholarship on the agrarian question has continued to develop over the century since its original formulation, and equally clearly, we cannot review here that entire century of scholarship. In the first two decades of the 21st century, scholars of agrarian

studies debated the status of the agrarian question, positing different dynamics as decisive in determining the trajectory and significance of agrarian transitions under neoliberal globalization. For example, the “agrarian question of land” examined the centrality of land control in shaping contemporary power and property relations ([Akram-Lodhi et al., 2009](#)). The “agrarian question of labor” examined whether it made sense to refer to contemporary small farmers as “peasants” or instead as agrarian labor, and the extent to which agriculture had come to be organized by relations among different classes of agrarian labor ([Bernstein, 2006](#); [McMichael, 2006](#)). The “agrarian question of food” denaturalized a focus on market-based food production, shifting toward a focus on the demands among global peasant movements surrounding “food sovereignty” as opposed to food security ([Edelman et al., 2016](#); [McMichael, 2013](#)). Others asked whether agriculture matters to the accumulation of capital ([Akram-Lodhi and Kay, 2009](#)), about the significance of gendered relations of production ([Ossome and Naidu, 2021](#); [O’Laughlin, 2009](#)), and about the political possibilities of alliances between rural and urban classes ([Moyo et al., 2012](#)). A broad consensus has developed in the field that capitalism and industrial growth now depend far less on surpluses of food or labor from peasant agricultural systems than they did in the previous century, and that agrarian politics are thus less likely to lead directly to revolutions or wars ([Levien et al., 2018](#)). Indeed, there is the real prospect that contemporary capitalism views many agrarian producers and production more as disposable obstacles than as objects of transformation and incorporation, while still relying critically upon territories and resources drawn from them.

Yet in recent years, it has become clear that climate change is playing a vastly larger role in contemporary agrarian dynamics than scholarship in the field of agrarian studies anticipated.² This emerging understanding is reflected in a very recent *Journal of Peasant Studies* Forum featuring scholarship on “climate change and critical agrarian studies” ([Scoones et al., 2024](#); see also [Shattuck et al., 2023](#)). This work reflects on how today, the continued expansion of capitalism and its metabolism of nature is responsible for and inextricable from climate change

(Fraser, 2021; Matthan, 2023); climate change contributes to the destruction of agrarian lives and landscapes; and agrarian transitions are increasingly shaped by and shape climate change and how we seek to live with it, including adaptation and mitigation. Thus, understanding climate change as a powerful global political force must entail understanding how it is imbricated with the dynamics of agrarian change.

While we agree with and build on this recent turn in the field, we also see ourselves as making distinctive contributions not yet present in it. One is that the *Journal of Peasant Studies* Forum and related pieces above assume a deep knowledge of the agrarian question and do not explicate it for readers new to the concept. We do so, in relationship to climate change, in the belief that the most urgent audiences for the argument are scholars and policymakers not yet familiar with the agrarian question.

Another distinction is that much of the work above takes the interests and fates of small agrarian producers as politically and normatively central. Shattuck et al., for example, argue that “the original purpose behind the agrarian question” was to “transcend capitalist relations in the countryside” (2023: 500) and take that as their central project as well. We contend, instead, that the original agrarian question sought to understand and affect not only relationships in the countryside but also the place of the countryside and agriculture within capitalism as a whole, in order to transcend capitalist relations overall. Thus the agrarian question of climate change means moving beyond what Borras has called a “merely agrarian” politics (2023) to demonstrate not just that climate change and its politics are reshaping the agrarian world in profound ways, but that such dynamics are in fact foundational to the logic of capitalism today.

A third difference from the recent literature is that we make specific arguments about capitalists’ decisions to invest in production on agricultural lands, a theme largely absent from the recent pieces above. Specifically, we emphasize the importance of analytical distinctions between biotic and abiotic production, and between land merely being used to grow

different crops (e.g., biofuels) and being taken out of agriculture altogether (e.g., for much recent solar and wind development and some visions of coastal retreat), and argue that both matter greatly for the question of whether, when, and where capitalists invest in “nature-based” production.

We argue, then, that where the classical agrarian question was concerned with the role of the agricultural sector in resolving the fundamental tensions at the heart of capitalism, today agrarian landscapes are similarly a primary terrain of struggle for strategies for resolving the fundamental contradictions of capitalism under climate change. We must therefore examine how capitalism takes hold of agriculture and agrarian landscapes through contemporary climate change adaptation and mitigation measures, the kinds of transformations these dynamics produce, and their consequences.

The centrality of agriculture in visions for both adaptation and mitigation indicates that not only is climate change transforming agriculture but also that agriculture is at the heart of how humans are learning to live with a changing climate. As these discourses grow, agrarian lives and landscapes become the object of programs for both climate change mitigation and adaptation (Franco and Borras, 2021). Scientists have debated the implications of climate crisis rhetoric that warns of climate impacts for which it is “too late” (Asayama et al., 2019; Paprocki, 2022). While the political potency of these narratives and their potential to catalyze action or backlash have received much attention, the impacts of this sense of inevitable crisis are unequally distributed within and between communities (Farbotko, 2010; Schneider-Mayerson, 2017). Claims of the necessity and inevitability of agrarian decline in response to climate crisis are manifested in demands for scaling up renewable energy projects for mitigation as well as through adaptation projects that displace agrarian producers in the name of resilience. Emerging literature in agrarian studies has embraced this demand to investigate the implications of climate change for the future of agriculture and small farmers (McDonagh, 2012).

Our contention is that we can understand these dynamics far better if we recognize their parallels

and continuities with the dynamics examined in the classical agrarian question. For example, the agrarian question has always been centrally concerned with the class structures embedded in the political economy of agriculture, asking under what conditions certain agrarian classes are called into existence or made to disappear. Yet claims that some farming and agricultural livelihoods may no longer be viable in the time of climate change should be evaluated relative to previous predictions regarding the inevitable disappearance of the peasantry. Plainly: historical analysis leads us to question discourses of inevitability regarding agrarian collapse and the disappearance of the peasantry in the time of climate change and to focus instead on more precise identification of causal factors and patterns of intervention shaping contemporary agrarian livelihoods and class structures. Recognition of the ways in which such historical patterns shape contemporary climate vulnerability leads us to different understandings of adaptation and mitigation futures (O'Brien and Leichenko, 2000; Ribot, 2014).

III Lessons from the agrarian question of climate change

From this body of scholarship on the agrarian question, we distill the insights highlighted below as critical ones to bear in mind as we consider the transformations of agrarian societies and environments in the era of climate change. These insights, drawn from the original agrarian question and examined through an empirical review of contemporary work in agrarian studies, are focused on 1) the impacts of broader social processes on agrarian communities and landscapes; 2) the significance of the material relations of agriculture and other nature-based industries; 3) the significance of agrarian social structures; 4) the durability of the peasantry; and 5) the political stakes of these dynamics. Critically, we are not presenting these as an exhaustive list of consensus points from scholarship on the agrarian question: we are saying only that we find them very useful ones to think with in respect to contemporary agrarian

landscapes, particularly with respect to climate adaptation and mitigation efforts.

I Impacts of broader social processes

One of the most important insights of the agrarian question was that changes in agrarian landscapes are often rooted in processes of capitalist development centered elsewhere. Thus, while we need to take seriously the internal dynamics of agrarian landscapes, we must also put them in appropriate broader contexts. In the present, the anxieties and volatilities provoked by climate change, and efforts to address them via the creation of new sorts of climate-related markets on the one hand and financializing and securing access to land for powerful private and state actors on the other, both often in the name of adaptation or mitigation, are among the leading forces driving changes in agrarian landscapes.

National governments are formulating an ever-growing host of climate policies and commitments, from nationally determined contributions under the Paris Agreement on down, that are largely formulated in national capitals, but often implemented on and through agrarian landscapes. Yet as a review of related work makes clear, “climate change ‘solutions’ too often rely on dispossession and violence” (Allan et al., 2022). Too many such initiatives rely on the inherited logics and mechanisms of colonialism and development programs, using the powers of state and capital to push aside allegedly marginal land uses and users in order to make way for large-scale projects designed to maximize the monolithic production of some commodity (whether a crop, energy, or sequestered carbon) in the name of promised benefits for the country, humanity, or planet as a whole, while actually delivering capital accumulation and new forms of territorialized power and legitimacy for national governments at the expense of local populations (Bonilla, 2020; Lennon, 2017; Perry, 2021; Whyte, 2020).³

At the same time, many of the changes currently reverberating through agrarian landscapes around the world have their most proximate origins in the “global land rush,” which was itself largely a response to the 2008 financial crisis and the heightened political-economic volatility it initiated. While the

desire for land as a secure asset, one that often has potential for food, water, and energy production, is not reducible to anxieties about climate change, neither can it be separated from that growing concern (Ouma, 2020). Literature over the last decade on global land grabbing indicates that large-scale land deals can involve transitions in multiple directions within and between food, biofuels, and otherwise (Borras and Franco, 2012; Wolford et al., 2024). With respect to the increased treatment of rural lands around the globe as financial assets, Wolford et al. summarize: “As resources become financialised and so part of global trading systems...the politics of land, often in remote and inaccessible territories, is hooked in with global circuits of capital and finance in ways that earlier were inconceivable” (2024: 9). Both trends often translate into major new demands on land in agrarian landscapes.

Although this often means that agriculture continues on land that has been subject to a land deal or climate-related program, local agriculturalists are often excluded; when they are included it is often under adverse conditions, and the consequences vary between projects (White et al., 2012). Hall (2011) describes how this transition can entail a variety of different forms of dispossession, ranging from new patterns of incorporation into agriculture to absolute displacement. She finds that in Southern Africa, the majority of large-scale land deals entail transitions from food to biofuels, and that this process predominantly concentrates wealth and resources with private companies, resulting in the dispossession of small farmers. Reflecting on these processes of dispossession, Li describes a “truncated trajectory of agrarian transition” effected by large-scale land acquisitions (2011). By centering the perspective of labor, she finds that while land deals may result in the dispossession of small farmers, they often do not offer pathways toward stable waged labor on or off the farm. Thus, while the impacts of expanded biofuel production are variable, it is clear that they will often include agrarian dispossession even where agriculture is not fully supplanted.

Recent work in feminist agrarian studies has highlighted in particular the gendered processes through which these large-scale land deals reshape agrarian livelihoods. This takes place in particular

through transformations in relations of social reproduction (Chung, 2017). These deals reshape agrarian lives and livelihoods by producing new gendered subjects of regulatory control, often through the exclusion of women in land deal negotiations (Chung, 2020; De Vos and Delabre, 2018), by undermining women’s subsistence production in favor of the expansion of cash crops (Elmhirst et al., 2017), through failures of recognition of women’s customary land rights (Julia and White, 2012; Verma, 2014), threatening access to common land and resources (with disproportionate impacts on women) (Daley and Pallas, 2014), and through transformations in the gendered division of labor, for example, through the incorporation of women into low-wage, low-skilled temporary plantation labor arrangements (Behrman et al., 2012). These transformations parallel longer histories of gendered impacts of capitalist transformations of agriculture, taking on new and magnified forms in the contemporary moment.

In addition to land use demands for expansion of renewable energy technologies, discussed below, carbon mitigation efforts can also involve transformations in land markets, for example, through carbon accounting and payments for ecosystem service (PES) programs (Galvin and Silva Garzón, 2023). In the cases of carbon markets, buyers purchase offsets to finance climate change mitigation activities as compensation for their greenhouse gas emissions. PES programs often pit the carbon sequestration benefits of forests against those of managed agroecosystems such as shade coffee plantations, creating false dichotomies in mitigation programming that supplants agriculture from rural landscapes (McAfee and Shapiro, 2010).

The dynamics leading to agrarian differentiation are generally observable over time periods longer than those of adaptation interventions and cannot be reduced solely to the impacts of climate change or adaptation. Often adaptation becomes an opportunity for the reconfiguration of peasant relationships to suit capitalism and capitalist production (Camargo, 2022; Taylor, 2015). Climate change adaptation interacts with these secular dynamics in ways that can either mitigate or accelerate this differentiation. Such scholarship demonstrates that climate adaptation must be understood through its convergence with

agrarian capitalism and as a site of its reproduction. Climate change planning and finance are often embedded with normative development logics that deem agrarian dispossession through adaptation to be more feasible than rapid, large-scale urban mitigation. For example, Bracking describes how the Green Climate Fund relies on a logic that “the opportunity cost of removing poor farmers from their land is worth the mitigation effect given the relatively greater ability of rich people to oppose change” (2015: 291). In this sense, Bracking describes how adaptation facilitates agrarian dispossession precisely in order to maintain carbon-intensive capitalist growth and attenuate the demand for greater mitigation.

Adaptation can also reshape the subjectivities of agriculturalists, enrolling them in new kinds of relationships with states and markets (Guermont et al., 2023; Mills-Novoa et al., 2020). Work on index-based insurance in regions from Africa to the Caribbean, for example, has found that interventions to promote climate change adaptation through insurance-based financial instruments serve primarily to produce risk-bearing financial subjects through agricultural financialization (Johnson, 2013; Knudson, 2018), thus pulling more small producers more deeply into the global capitalist economy while leaving existing axes of vulnerability intact. Conversely, some interpretations of Adaptive Social Protection suggest that a rights-based approach redistributes risks of climate vulnerability from individual farmers to the state, thus distributing responsibilities for climate response more equitably (Davies et al., 2009; Tenzing, 2020). These competing visions of distribution of climate risks have significant implications for individual farmers’ ability to cope with climate threats. Consequently, they also shape differentiation among agrarian communities in different ways, with approaches that concentrate risk on individual farmers resulting in greater threats to the most vulnerable.

Our overall point is that the strengths of the predominantly ethnographic, place-specific research approaches above must be complemented with recognition of—and research on—the extent to which these processes transforming rural areas have their origins in sites of international finance and

geopolitics, and of the extent to which the latter are increasingly imbricated with the dynamics of climate change.

2 *The significance of nature-based production*

Another key facet of the agrarian question debates was the thesis that agriculture’s reliance upon and vulnerability to natural conditions and processes—weather, insects, plant growth, and more—introduces uncertainties that make it less attractive to capitalists than more predictable and controllable branches of industry. Small producers’ willingness to take on and navigate those risks, and capitalists’ eagerness to have them do so while still commodifying and profiting from agricultural production upstream and downstream of the actual growing of living things, have powerfully shaped many agricultural, livestock, and poultry production systems up to the present and are part of the reason for the persistence of small producers within what has become, nonetheless, a heavily capitalist sector (Goodman and Watts, 1997). The physical and social properties of land often obstruct predicted agrarian transitions and impede the incorporation of land and agriculture into circuits of capitalist production (Fairbairn, 2020). The validity of this thesis is evident in the fact that well into the current century, most of the food human beings eat is still grown using significant amounts of human labor, often on small farms (Shattuck et al., 2023: 491). To be sure, capital’s reluctance to enter deeply into agricultural production is far from absolute, as much of California’s history and landscape demonstrate (Guthman, 2004; Mitchell, 1996), and agriculture’s material challenges can also provide opportunities for capital (Henderson, 1998). Yet the basic question, of “what difference nature’s difference makes” in how capital engages with land- and nature-based production, is still critical and has been explored relative to many other nature-based industries as well (see, e.g., Boyd et al., 2001; Prudham 2012).

We see this question as highly relevant to climate change mitigation efforts, in which a major new wave of capital is being worked into agrarian and other rural landscapes in a variety of new ways just as dependent as agriculture upon natural conditions and

processes. Whether it be renewable energy generation, geoengineering, “climate-smart” agriculture, afforestation and carbon sequestration with associated payments, or other conservation measures (see, e.g., Clapp et al., 2018; Osborne, 2013; Paredes and Kaulard, 2023), nearly all major current or proposed mitigation methods imply huge new demands on agrarian landscapes. Insights from the agrarian question can help us to understand many of the associated drivers and dynamics.

We focus here on renewable energy generation, which is currently the most developed of the strategies above and hence clearest in its dynamics. An enormous wave of investment in large-scale solar and wind energy projects is following a slightly earlier wave of biofuel production as a major new claimant on rural, often agrarian, lands and landscapes. The scale of this investment is enormous, and its scope global: new annual investments in energy transition technologies reached over \$1.8 trillion in 2023, with new solar and wind energy investments representing approximately \$500 billion of that total (BNEF, 2024), and new investments in renewable energy now substantially exceed those in fossil fuel production (IEA, 2023) (although see Christophers, 2022, for a skeptical view). While arguably welcome from a climate perspective, these technologies require substantial areas of land to produce energy on scales remotely comparable to current fossil fuel usage: as Huber and McCarthy (2017) have argued, renewable energy production on the scale required for meaningful climate mitigation would mean a return to a land-based surface energy regime and the creation of fundamentally new energy geographies. Renewable energy projects are thus often competing directly with, and in many cases displacing, agricultural and livestock production, in most cases on lands deemed “marginal” for the latter. Indeed, Scheidel and Sorman (2012) argue that the pressures of energy transition underlie all the broader dynamics of dispossession and conflict in the post-2008 global land rush. Many geographers have begun to examine the profound landscape transformations that would result from such a transition to low-carbon energy and associated conflicts over land use change (e.g., Bridge et al., 2013; Knuth et al., 2022), as well as their justice implications (Avila, 2018).

Looking through the lens of the agrarian question at this wave of investment in renewable energy generation on rural lands, particularly its dominant form of industrial-scale solar and wind projects connected to expanding national grids, leads us to ask three key analytical questions regarding it. The first is *what difference material environmental specificities make in the relative attractiveness of these particular forms of land-based production for capitalist investors*, particularly when they are often being built on lands that were previously used by small agricultural producers. Most of these projects are being built by private firms, often multinational ones, on a purely commercial, for-profit basis. While the solar and wind energy industries are certainly still nature-based, directly reliant upon environmental forces and processes largely beyond human control, sunlight and wind over time in a given location are vastly more certain, consistent, and predictable than crop or livestock production, in no small part because they are abiotic rather than biotic—a critical analytical distinction ironically almost completely ignored thus far in the specifically agrarian studies literature on climate change, so far as we can tell. As such, they are likely to be more compatible with large-scale capitalist investment than many forms of agriculture. Indeed, a substantial industry is now devoted to mapping the solar and wind potential of nearly every spot on earth, and the resulting maps are used to attract, steer, and reassure investors (McCarthy and Thatcher, 2019). Electricity is also highly suitable for export to distant cities and other countries: it does not spoil in transit. In short, renewable energy generation entails far less natural uncertainty and risk than agriculture and hence appears to be a more attractive prospect for capitalist investment and accumulation than agricultural production. This is especially true given two conditions that obtain for most of these projects: the lands in question are not prime farmland but “marginal,” and even that agricultural production is increasingly uncertain in the context of rapidly and unpredictably changing climates. By contrast, the certainty of a true “factory in a field” (McWilliams, 2000)—a vast photovoltaic array on what had been farmland—allows its capitalist owners to sleep well at night. The agrarian question thus helps us to understand

why multinational renewable energy firms are eagerly displacing small agrarian producers to make way for large, industrial-model renewable energy projects that produce value year-round in extremely predictable patterns. These material specificities matter in understanding contemporary developments in rural landscapes in ways far more analytically precise than simply noting that multinational investment flows or government commitments often motivate them.

The second is *how this particular form of land-based production fits within the overall evolution and functioning of the capitalist economy, particularly when the latter is increasingly called into question by climate change*. In the context of the apparent necessity of a transition away from fossil fuels alongside equally evident commitments to continued capitalist growth by most dominant actors, renewable energy industries would appear to be vital not only to the specific firms in the sector but also to the future of the capitalist economy as a whole. The very strong levels of state support for the sector in most industrialized and many developing countries (REN21, 2023) would seem to support that interpretation. Energy is now as or more essential as food to industrial capitalism on a global scale: the grim reality is that contemporary capitalism can tolerate at least localized food shortages and even famines far better than it can tolerate systemic energy shortages. A global-scale buildout of a renewable energy system could have other systemic benefits for capitalism, as well (at tremendous cost to some): by absorbing surpluses of capital and labor, and demonstrating that capitalist accumulation can be cleaved from fossil fuel emissions, it could provide temporary spatial and socio-ecological fixes to the capitalist crises manifest in climate change (McCarthy, 2015). The ways in which some smallholder agriculture may be sacrificed to the demands of the larger capitalist economy in the context of climate change can also be seen in geoengineering proposals. For instance, so-called “solar radiation management” (advocated almost entirely by white, male scientists from institutions in the global North) might allow for continued fossil fuel emissions by reducing incoming sunlight but could have major effects on monsoon dynamics and other weather patterns crucial for

agricultural production and livelihoods, particularly for farmers most dependent on natural inputs (Morton, 2015; Surprise, 2020). While such scenarios would not involve direct capitalist investment in or on those landscapes, they would still demonstrate that the reproduction of capitalism as a whole shapes conditions for smallholder agriculture (in this case, by risking it).

The third question is *where and how the wave of new renewable energy projects is being built*. Where many new solar and wind projects are being sited, how they are ending up on those lands in particular, and who and what they are displacing, cannot be understood without attention to the legacies of colonialism, modernization, and development on smallholder agriculture—all central topics in agrarian studies. In short, many of these projects, particularly in the Global South, are being built on the lands of, and competing with, the most “marginal,” insecure, and vulnerable forms and practitioners of agriculture and pastoralism (i.e., the very people and land uses long predicted to be displaced from agriculture by capitalist development), creating landscapes and futures that Alonso-Fradejas (2021), describing sugar cane and palm oil complexes in Guatemala used for both biofuels and carbon sequestration, has aptly characterized as “renewable but unlivable.” The literature is, unfortunately, replete with examples of states, multinational corporations, and multinational development and funding organizations effectively pushing aside small-scale agricultural producers, often from what are officially classified as “waste” lands thanks to colonial legacies, to make way for large renewable energy projects—solar, wind, or biofuel—that will produce energy for export, national development goals, or both (see, e.g., Baka, 2017; Brannstrom et al., 2017; Hesketh, 2022; Rignall, 2016; Singh, 2022; Stock and Birkenholtz, 2019; Yenneti et al., 2016). This is mainly because of the land areas needed by large-scale solar, wind, and biofuel projects (Huber and McCarthy, 2017; Scheidel and Sorman, 2012), but the mineral needs of solar and wind technologies are also beginning to profoundly reconfigure geographies of extraction, which can also have major effects on small holders (Klinger, 2017; Taşdemir Yaşın, 2022). Precisely how renewable energy projects are

commonly routed onto the lands of the poorest and most vulnerable, via existing agrarian social relations and structures, is explored in the following section.

3 Significance of agrarian social structures

Another critical point from agrarian studies scholarship is that agrarian transformations happen, not on a blank slate, but through the (often very persistent) social structures of agrarian communities, whether those concern class relations, land tenure, governance, social reproduction, or more. Thus, as we investigate and analyze the sweeping forces above now moving through rural landscapes in the name of climate adaptation and mitigation, even as we recognize their often extra-local origins, we must attend closely to *how* those changes work through historical and existing place-specific social structures and property relations (Matthan, 2023).

It is well established in political ecology and agrarian studies that many climate change mitigation and adaptation efforts are deeply interwoven with legacies and ongoing practices of appropriation, displacement, and dispossession in agrarian and other rural landscapes (Avila, 2018; Baka, 2017; Borrás et al., 2016, 2022; Bruna, 2022; Corbera et al., 2017; Rignall, 2016; Rosa et al., 2021; Taylor, 2015). This literature reveals how climate change, and responses to it, presents simultaneous opportunities for some and challenges for others (Argent, 2019; O'Brien and Leichenko, 2003). Differential resource access shapes not only vulnerability to climate change but also the distribution of benefits and risks of adaptation and mitigation themselves (Natarajan et al., 2019; Taylor, 2013). As Camargo and Ojeda have written, "exclusion and marginality... are inherent to the promises of climate change mitigation and adaptation" (2017: 58). In this sense, all solutions to climate change will be bad solutions for some people, and one person's adaptation may be another person's maladaptation (Eriksen et al., 2015; Paprocki and Huq 2018). By identifying the distributional effects of these impacts within agrarian communities, we can understand better not only how climate change is impacting agricultural communities and how it will do so in the future, but also how to pursue more equitable solutions.

The stability of land tenure has a significant impact on who benefits and who suffers from climate change adaptation and mitigation in agrarian landscapes. The differential distribution of impacts of renewable energy development is a key example of this. As Alonso Serna (2022) and McDermott Hughes (2021) show for cases in, respectively, Mexico and Spain, and as seen in many other cases around the world, owners of large parcels with secure tenure are able to use those assets and rights to gain rents from the development of new renewable energy facilities, both in the form of payment for the use of their lands as locations for those facilities and in the form of royalties based on the energy generated. So, old forms of land tenure tied to class positions can be used to secure new forms of land-based accumulation, thereby reinforcing existing agrarian class structures (see also Torres Contreras, 2022). Likewise, those with secure land tenure are able to choose whether or not to allow renewable energy projects on their land. Nor is class power limited to legal land tenure: Singh (2022) describes how upper-caste power brokers in Gujarat, India, use their caste-class positions to influence both legal and extra-legal processes around wind energy development in ways that perpetuate caste-class relationships of domination and colonial legacies (see also Alkhalili et al., 2023). More broadly, large landowners and other local elites are able to influence siting decisions for both projects and transmission lines, direct local jobs associated with the project to those they choose, and sometimes exercise veto power over whether a project is built in the area at all (Bartolome, 2018; McDermott Hughes, 2021).

Conversely, unequal land distribution is exacerbated by changes in agrarian land use. Just as elites can steer desirable development to their own lands, they can steer undesirable energy projects to the lands of the less powerful (Stock and Sovacool, 2023), particularly in cases where land tenure claims are tenuous (Osborne, 2013). In most cases of outright dispossession through renewable energy development, those dispossessed held only use, communal, and/or informal rights to the lands in question. This made it far easier for governments and project developers to minimize or entirely ignore their rights and the

effects of displacement. Indeed, there is clear evidence that in some cases, at least, the lands targeted for development were chosen precisely because current users held only informal rights: Brannstrom et al. (2017) suggest that the developers of a large wind farm in coastal Brazil chose to locate the facility on the coastal plain (cutting its residents off from resources critical to their livelihoods in the process) rather than on the inland coastal plateau that actually had better winds, precisely because the residents of the coastal plain had only informal land rights, whereas the land on the plateau was privately owned, meaning that it was far easier and cheaper to acquire the former than the latter. Likewise, Rignall (2016) argues that the Moroccan government chose to build a solar plant designed to produce electricity for export to Europe on collectively owned land in part because doing so served deeper state purposes of sedentarizing pastoral people dependent on that land for grazing. Such dynamics are often facilitated when the lands in question are officially classified as “waste” lands, a colonial legacy that makes it far easier to expel small-scale users and allow governments to repurpose the lands in the name of private investment and improvement (see, e.g., Baka, 2017; Singh, 2022; Yenneti et al., 2016). Even when those who already have less power in agrarian settings—the landless, the low-caste, the poor, tenant farmers, day laborers, and so on—are not displaced entirely by new renewable energy projects and remain living and working in the landscape, they are far more likely than elites to suffer the negative effects of large-scale energy production while reaping few or none of its benefits—a pattern all too familiar from sites of fossil fuel extraction. In the cases of large-scale renewable energy development, those negative effects include losing access to particular parcels of land for farming, losing agriculture-related jobs, and having to live and work in very close proximity to large wind turbines and solar farms and experience their negative everyday effects, which range from unpleasant and distracting industrial noises, sights, and shadows to potentially significant changes in local micro-climates

(see, e.g., Bartolome, 2018; McDermott Hughes, 2021).

While existing agrarian social relations shape the distribution of impacts of climate change adaptation and mitigation, these projects also in turn transform agrarian social structures and land tenure arrangements. For example, Borrás et al. write that the crop booms driven by the rise of “flex-crops” (linked with the growth of biofuel production) will transform relations between land owners, agricultural laborers, and other participants in agricultural value chains, often resulting in transformations in land tenure arrangements (2016). While the dynamics of agrarian change embedded in these crop booms may manifest in new or more intense ways, they may also draw on older patterns of accumulation and dispossession. For example, Lund describes the resurgence of old agrarian conflicts between smallholders and plantation owners in Aceh’s oil palm frontier, expanding rapidly in the biofuel boom of recent decades (2018). Wilson describes a program in Chiapas, Mexico, known as the Rural Cities Project, through which peasants are relocated and offered new houses on the condition that they give up subsistence agriculture and transition to producing biofuels and other export crops (2013). The rise of these flex-crops is both dependent on and entrenches unequal agrarian social structures.

In short, while agrarian transformations are often motivated by the imperatives of capital accumulation, purposes of state, or complex imbrications of the two, they never take place on blank slates: existing social structures have the capacity to powerfully channel new investments in programs, very often in ways that reinscribe and amplify pre-existing inequalities. We have illustrated this above primarily via examples focused on class and property relations, but of course those are not the only social structures that shape agrarian transformations under climate change. Many scholars have demonstrated how the effects of climate change adaptation will also be distributed along other lines of social difference (Kaijser and Kronsell, 2014), such as gender (Chung, 2024; Mehar et al., 2016; Nyantakyi-Frimpong and Bezner-Kerr, 2015), race (Hardy et al., 2017; Purifoy, 2022; Roane and Hosbey, 2019), and ethnicity (Adam et al., 2018; Shimm, 2018). These

transformations also have important implications for the future of farming, and specifically who can be a farmer in a climate changed future.

4 Durability of the peasantry

The durability of the peasantry often belies predictions of its obsolescence. This paradox has been at the heart of the agrarian question since its beginning. Where Lenin predicted the complete dissolution of the peasantry under capitalism, Kautsky proved that peasant production was actually integral to capitalist production, largely due to the capacity of peasants for self-exploitation. In *The Agrarian Question*, Kautsky moves from this assumption of peasant obsolescence to explain how exactly the opposite is true, that peasant production not only persists but is in fact necessary to the reproduction of capitalism (Kautsky, 1988 [1899]). He did this through empirical attention to a variety of special features of peasant production; these features continue to be critical to peasant production and its persistence under climate change. There are many reasons for this persistence, but they often come down to the challenges of nature-based agricultural production on the one hand, and small producers' attachments to particular landscapes, livelihoods, and identities, and their capacity and willingness to self-exploit to maintain them, on the other.

What we learn from examining these contradictions between discourses of peasant obsolescence and the reality of peasant durability is that teleologies of agrarian demise, including contemporary discourses surrounding them that posit climate change as an unprecedented driver of transition, are frequently manifestations of capitalism's ideological commitments to improvement and efficiency. As such, both they and their centrality to all too many capitalist visions of climate change adaptation and mitigation are suspect. In reality, the durability of the peasantry under climate change fundamentally challenges teleologies of capitalist transition.

Agriculture is central to multiple competing visions of climate change adaptation and mitigation. On the one hand, small farmers have long been viewed (from dominant political economic perspectives) as anachronistic, antithetical to capitalism

and its global expansion. These discourses have gained new traction as they have merged with discourses of climate crisis. Calls to dramatically increase food production to feed a growing global population amidst a changing climate, while simultaneously reducing the area devoted to agriculture in the name of "land sparing" and conservation (Thaler, 2024), have often centered classical capitalist strategies of investment, modernization, and intensification—a vision of the future in which small and traditional farmers and farming are at best marginal contributors, and at worst actual impediments to needed progress. Likewise, anticipation of disastrous physical impacts of climate change, especially in coastal areas threatened by sea level rise, has led to growing claims about the unviability of agriculture in many communities seen as under threat (Paprocki, 2022). Crudely, in this view, more and better capitalist agriculture is the solution to climate change.

On the other hand, however, many have come to recognize intensive capitalist agriculture as a direct and indirect cause of climate change: its clearance of forests and other land cover, massive use of fossil fuels, globalized commodity chains, and reliance on industrial nitrogen fixation have directly added billions of tons of carbon to the atmosphere, while its relentless drive to produce more and cheaper food regardless of the social and ecological costs is inextricable from the tremendous growth of the human population in the modern era. Rosa et al. (2021), emphasizing the need to consider the energy implications of agrarian transitions and large-scale land acquisitions, point out that global food systems currently use 15–30% of global primary energy and produce 25–34% of total global greenhouse gas emissions, and estimate that large-scale, high-input commercial agriculture uses five times as much fossil fuel as smallholder, low-input agriculture. Thus, climate change clearly requires alternatives to capitalist agriculture. From this perspective, agricultural systems and landscapes that predate or differ from the model of capitalist agriculture have come to be seen as both reservoirs and laboratories for experimentation with new (or old) technologies for living with the threat of climate crisis: for example, many observers contend that agroecology modeled on

older forms of agriculture is the most promising model for “climate-smart” agriculture moving forward. Crudely, in this view, post-, or pre-, capitalist agriculture is the solution to climate change.

While the actual future of the peasantry is necessarily speculative, we do have some evidence that the creativity, endurance, and commitment to particular places and livelihoods among peasant communities today allow agrarian production to continue even in the face of climate threats. Examples include changing cropping schedules (Juhola et al., 2017), agroecology (Bezner Kerr et al., 2018), and community seed banks (Maharjan and Maharjan, 2018). Still others have described livelihood diversification as an adaptation strategy that allows for the persistence of farm households (Antwi-Agyei et al., 2014). In some cases this means diversification on the farm to other crops (Forsyth, 2013), and in others it means livelihood diversification toward off-farm economic activities (Alam, 2015; Kusunose and Lybbert, 2014). The point is that even where some adaptation paradigms are linked with agendas of agricultural transformation through increased productivity and the associated loss of agricultural livelihoods (Karlsson et al., 2018), it is also the case that agrarian communities resist dispossession through both opposition to capitalist development models that exacerbate climate vulnerability (Borras and Franco, 2018) and the subversion of adaptation interventions that perpetuate dispossession themselves.

5 The political stakes

As the examples above demonstrate, the impacts of climate action on rural communities will not be neutral and will involve significant political contestation. As the editors of the *Journal of Peasant Studies* have recently written, “the agrarian question has always been political at its heart,” and the accelerating conditions of climate change and associated responses only make understanding these politics more urgent (Shattuck et al., 2023). Debates around the classical agrarian question investigated empirical conditions of agrarian transformation, but they did so specifically in order to understand the political stakes of agrarian change. They were interested in what would happen to the peasantry

because they wanted to understand the implications of these transitions to potential peasant political alliances. Could peasants be partners in the development of socialism, or would they turn out to be class enemies of the proletariat? Kautsky theorized that “two souls inhabit the breast” of the peasant (1988 [1899]: 324), by which he meant that their political alliances were indeterminate. This question, and its political implications, is just as significant today, as resistance to both climate change and strategies for addressing it come to be defining political struggles of our times.

We have described above a series of agrarian transitions happening through responses to climate change. Rural communities are resisting these transitions. Now and in the future, this resistance does and will take multiple forms, which could incline toward very different sorts of politics and alliances. For example, a similar politics of popular sovereignty has emerged in populist movements opposing oil pipelines in North America, which have included coalitions of Native activists, farmers, ranchers, and other rural resource users (Bosworth, 2019; Grossman, 2017; Van Sant and Bosworth, 2017). By recognizing potential alliances embedded in rural struggles against fossil fuel development, these struggles articulate pathways toward climate justice embedded within agrarian livelihoods, not antithetical to them (Borras, 2020). However, as the recent rise of authoritarian populism has highlighted, it is also often the case that rural resource users are threatened by climate action and hence align themselves with resource nationalism and other conservative, often rentier, politics that advocate for continued fossil fuel extraction (Koch and Perreault, 2019; McCarthy, 2002, 2019; Schwartzman, 2022; Van der Ploeg, 2020).

It is not only populists who resist climate action, of course. We can also see these diverse political alliances playing out in the varied reactions of many rural communities to large-scale solar and wind projects taking their lands for ends that are, they are told, the cutting edge of the future and essential for national development goals: many resist, but some accept (Van den Bold, 2023). Recent scholarship in agrarian studies has also highlighted a variety of “counter-hegemonic politics of agrarian transformation” that build on longstanding repertoires of agrarian resistance to

oppose and transform capitalist climate change adaptation and mitigation interventions (Mills-Novoa et al., 2023; Paprocki, 2021). What is clear in examining these diverse movements is that the socio-cultural politics of the rural world are heterogeneous, contingent, and pivotal in shaping future climate action (McCarthy et al., 2014).

Given this significance of agrarian politics to the future of climate action, it is necessary to center them in investigating the possibilities for climate change mitigation and adaptation. Moreover, while the experiences of rural communities with climate change mitigation and adaptation are often quite new, they are also mediated by existing histories and political economies that have already shaped the agrarian world in profoundly unequal ways. Agrarian political responses to climate action thus often respond to the ways that climate mitigation and adaptation intervene in these existing power relations. Visions of climate action and climate justice that do not recognize these entanglements with longstanding inequalities in agrarian power relations risk reproducing them.

This significance of agrarian politics to understanding broader dynamics of capitalist transition was identified by Watts when he wrote that the agrarian question of labor has been replaced to some extent by Gramsci's "southern question" (Watts, 2009). In this seminal but unfinished essay, Gramsci examines the implications of new forms of capitalist accumulation to rural politics, highlighting the revolutionary political possibilities in alliances between proletarian and peasant classes (2000 [1926]). By highlighting the political potential of the peasantry, Gramsci challenges traditional Marxist notions of peasantries as backward, reactionary, and lacking in political consciousness (famously exemplified by Marx's reference to peasants as "a sack of potatoes" [1963 [1869]: 124]). Today, we might identify similar patterns in discourses of urban climate futures, many of which center urban development and political imaginaries of "smart cities," green infrastructure, and the like as the vanguard of climate action and sustainability (Angelo and Wachsmuth, 2020), often at the implicit or explicit expense of rural lives and livelihoods (Paprocki, 2020). The agrarian question of climate

change re-centers agrarian politics in these future climate imaginaries. It also undermines narrow rural–urban binaries as they manifest across spatial scales and configurations. For example, Safransky's research on radical black farmers in Detroit explores new moral economies of land and property rights emerging in an urban context where planners and government officials sought to dispossess urban lands for the sake of green infrastructure development (2023). Such examples suggest opportunities not only for resistance to dispossession through particular forms of climate action but also for forging new kinds of coalitions between rural and urban communities facing these transitions across diverse geographic contexts.

Linking these struggles with one another also carries the implication that agrarian justice and climate justice are inseparable (Avila et al., 2021). Yet, as many of the examples highlighted in this essay indicate, often interventions carried out in the name of climate justice are at odds with goals of agrarian justice. Here, Borrás and Franco's concept of "agrarian climate justice" is useful insofar as it articulates a normative framework for analyzing the linkages between the two (even as they also recognize the frequent contradictions between them in practice) (2018). They frame these struggles for agrarian climate justice around redistribution, recognition, restitution, regeneration, and resistance (*ibid.*). Indeed, there is increasing evidence of visions for climate justice being pursued and enacted directly through struggles for agrarian justice (Fash et al., 2023; Hobsbey et al., 2023; Roane et al., 2022; Sekine, 2021).

What is also clear from the review presented here is that none of the agrarian futures proposed by development agencies, policy makers, or academics are inevitable. These are futures that are being actively shaped in the present, and hence they are critical sites of intervention and struggle—actions that can, we argue, be productively informed by engagement with the agrarian question.

IV Conclusion

Examining the agrarian question of climate change reveals insights into how the agrarian world is

transforming through climate change and responses to it. It also illuminates why these changes matter. Contemporary climate discourse—popular, policy, and academic—is marked by narratives of agrarian transition, both physical and social. These narratives often take the form of teleologies about the peasantry, capital investment, and physical transformation. An understanding of the agrarian question demonstrates that the agrarian world is indeed rapidly transforming in the time of climate change. Yet it is often not doing so as these teleologies predict.

Broader social and economic processes at multiple spatial and temporal scales profoundly shape life in agrarian communities under climate change. Climate change adaptation and mitigation often work precisely through strategies for enrolling agriculturalists into markets of various sorts, or excluding them from such markets, as the case may be. These dynamics often extend the secular patterns of colonialism and global capitalism that predate climate change. It is important to be attentive to the justice issues at stake when agrarian producers are being asked to solve much larger-scale problems, or resolve contradictions, not of their own making.

Understanding the conditions of agrarian production also means appreciating that it is very difficult to fully plan for or control nature-based activities, whether that be agriculture, carbon sequestration, or renewable energy generation. There will always be major elements that exceed human knowledge or control. In this case, how the production of food and, increasingly, energy will co-exist and compete on rural lands will shape accumulation trajectories in powerful ways.

Reviewing scholarship on climate change adaptation and mitigation in the agrarian world guided by the agrarian question also demonstrates the importance of taking agrarian social structures seriously. While there is no question that capitalism has taken hold of agriculture in almost every community on earth, the social relations of agriculture are persistent in the face of this. The implication is that these social structures will shape any intervention into agrarian communities or landscapes, whether for climate change adaptation, mitigation, or otherwise. Capitalist climate change adaptation and mitigation in fact often rely precisely on these social structures to

facilitate extraction, and they are thus necessary to its continued expansion. In this way, agrarian social structures themselves mediate and sometimes facilitate or hinder capitalist development that relies on agrarian exploitation.

Peasants and small producers will not go away just because policymakers tell them to, or because continuing what they are doing is not perfectly rational or optimal according to some abstract metric (whether that be of profitability, or under some system of carbon accounting). Historically, they have frequently persisted in the face of predictions of their demise. The lesson from the classical agrarian question is that it is important to be wary of diagnoses and prescriptions that seem always to say that the answer is for some producers to get bigger and more capital-intensive, and for lots of small producers to get out of agriculture, off the land, and out of the way of progress and modernity. Such analyses have suspect roots, miss a lot, and rarely turn out as predicted.

This durability of the peasantry is both an empirical fact and a political one. Peasants and rural communities resist predictions of their demise and policies that accelerate it. Rural/agrarian resistance to adaptation and mitigation schemes that call for substantial depopulation, elimination of agriculture, and other wrenching changes is entirely predictable and potentially politically potent, but also politically polyvalent: it could go in many different directions (Borras, 2020). This is a very pragmatic reason for taking rural claims regarding (in)justice very seriously.

The classical agrarian question makes clear that what happens in agriculture and agrarian communities matters for trajectories for overall development. Today, addressing this agrarian question requires grappling with how plans for capitalist climate change adaptation and mitigation are reshaping agrarian communities and landscapes and the political implications of these interventions. Doing so helps us not only to understand contemporary agrarian transitions but also to understand possibilities for climate futures more broadly.

So what, then, is the future of farming in the time of climate change? Contra Monbiot, we are certainly not witnessing the “end of farming.” Rather, as we

have shown, agriculture in myriad forms is almost certain to be central to human futures as they evolve in response to capitalism and climate change. Geographers cannot predict or control what forms those futures will take as we move into a climatic era different from that in which all agriculture developed. But what we can do is demonstrate the viability of and need for diverse, democratic agrarian futures in the face of perpetual modernizing calls for massive agrarian transformation and dispossession; clarify the social and ecological stakes; and approach debates over those futures with the sharpest analytical tools we have, including those earned through the classical agrarian question.

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ORCID iD

Kasia Paprocki  <https://orcid.org/0000-0001-5202-351X>

Notes

1. See also Harriet Friedmann’s review of Monbiot’s book grounded in the agrarian political economy he misses (2022).
2. This is not to suggest that scholars of agrarian studies have not long been concerned with climate change—see, for example, McMichael (2009). Rather, we highlight that it has only been recently that the field has come to center questions about the broader implications of climate change to understanding the future of capitalism and agrarian life.
3. Such investments also often fail, on even their own terms, to reach goals of development and modernization (Scott, 1998).

References

- Adam HN, Kjosavik DJ and Shanmugaratnam N (2018) Adaptation trajectories and challenges in the Western Ghats: a case study of Attappady, south India. *Journal of Rural Studies* 61: 1–11.
- Akram-Lodhi AH and Kay C (eds) (2009) *Peasants and Globalization: Political Economy, Rural Transformation and the Agrarian Question*. London and New York: Routledge.
- Akram-Lodhi AH and Kay C (2010a) Surveying the agrarian question (part 1): unearthing foundations, exploring diversity. *The Journal of Peasant Studies* 37(1): 177–202.
- Akram-Lodhi AH and Kay C (2010b) Surveying the agrarian question (part 2): current debates and beyond. *The Journal of Peasant Studies* 37(2): 255–284.
- Akram-Lodhi AH, Kay C and Borras SM Jr (2009) The political economy of land and the agrarian question in an era of neoliberal globalization. In: Akram-Lodhi AH and Kay C (eds) *Peasants and Globalization: Political Economy, Rural Transformation and the Agrarian Question*. London and New York: Routledge.
- Alam K (2015) Farmers’ adaptation to water scarcity in drought-prone environments: a case study of Rajshahi district, Bangladesh. *Agricultural Water Management* 148: 196–206.
- Alavi H and Shanin T (1988) Introduction. In: *The Agrarian Question. Volume I*, by Karl Kaustky. London: Zwan Press, xi–xxxix.

- Alkhalili N, Dajani M and Mahmoud Y (2023) The enduring coloniality of ecological modernization: wind energy development in occupied western Sahara and the occupied Syrian Golan heights. *Political Geography* 103: 102871.
- Allan J, Lemaadel M and Lakhali H (2022) Oppressive energopolitics in Africa's last colony: energy, subjectivities, and resistance. *Antipode* 54(1): 44–63.
- Alonso Serna L (2022) Land grabbing or value grabbing? Land rent and wind energy in the Isthmus of Tehuantepec, Oaxaca. *Competition & Change* 26(3–4): 487–503.
- Alonso-Fradejas A (2021) Leaving no one unscathed' in sustainability transitions: the life purging agro-extractivism of corporate renewables. *Journal of Rural Studies* 81: 127–138.
- Amin S (2017) The agrarian question a century after October 1917: capitalist agriculture and agricultures in capitalism. *Agrarian South: Journal of Political Economy* 6(2): 149–174.
- Angelo H and Wachsmuth D (2020) Why does everyone think cities can save the planet? *Urban Studies* 57(11): 2201–2221.
- Antwi-Agyei P, Stringer LC and Dougill AJ (2014) Livelihood adaptations to climate variability: insights from farming households in Ghana. *Regional Environmental Change* 14(4): 1615–1626.
- Argent N (2019) Rural Geography II: Scalar and Social Constructionist Perspectives on Climate Change Adaptation and Rural Resilience. *Progress in Human Geography* 43(1): 183–191.
- Asayama S, Bellamy R, Geden O, et al. (2019) Why setting a climate deadline is dangerous. *Nature Climate Change* 9: 570–572.
- Avila S (2018) Environmental justice and the expanding geography of wind power conflicts. *Sustainability Science* 13: 599–616.
- Avila S, Deniau Y, Sorman AH, et al. (2021) Counter mapping renewables: space, justice, and politics of wind and solar power in Mexico. *Environment and Planning E: Nature and Space* 5(3): 1056–1085.
- Baka J (2017) Making space for energy: wasteland development, enclosures, and energy dispossessions. *Antipode* 49(4): 977–996.
- Banerjee A (2023) Agrarian questions: new paradigms in a changing world. *Development and Change* 54(3): 671–687.
- Bartolome JF (2018) *Power Struggles: Dignity, Value, and the Renewable Energy Frontier in Spain*. Bloomington: Indiana University Press.
- Behrman J, Meinszen-Dick R and Quisumbing A (2012) The gender implications of large-scale land deals. *The Journal of Peasant Studies* 39(1): 49–79.
- Bernstein H (2006) Is there an agrarian question in the 21st century? *Canadian Journal of Development Studies* 27(4): 449–460.
- Bezner Kerr R, Nyantakyi-Frimpong H, Dakishoni L, et al. (2018) Knowledge politics in participatory climate change adaptation research on agroecology in Malawi. *Renewable Agriculture and Food Systems* 33(3): 238–251.
- BNEF (2024) *Energy Investment Transition Trends*. New York: Bloomberg New Energy Finance.
- Bonilla Y (2020) The coloniality of disaster: race, empire, and the temporal logics of emergency in Puerto Rico, USA. *Political Geography* 78: 102181.
- Borras SM Jr (2020) Agrarian social movements: the absurdly difficult but not impossible agenda of defeating right-wing populism and exploring a socialist future. *Journal of Agrarian Change* 20(1): 3–36.
- Borras SM Jr (2023) Contemporary agrarian, rural and rural–urban movements and alliances. *Journal of Agrarian Change* 23(3): 453–476.
- Borras SM Jr and Franco JC (2018) The challenge of locating land-based climate change mitigation and adaptation politics within a social justice perspective: towards an idea of agrarian climate justice. *Third World Quarterly* 39(7): 1308–1325.
- Borras SM Jr, Franco J, Isakson SR, et al. (2016) The rise of flex crops and commodities: implications for research. *The Journal of Peasant Studies* 43(1): 93–115.
- Borras SM Jr, Scoones I, Bavisar A, et al. (2022) Climate change and agrarian struggles: an invitation to contribute to a JPS forum. *The Journal of Peasant Studies* 49(1): 1–48.
- Borras SM Jr and Franco JC (2012) Global land grabbing and trajectories of agrarian change: a preliminary analysis. *Journal of Agrarian Change* 12(1): 34–59.
- Bosworth K (2019) The people know best: situating the counterexpertise of populist pipeline opposition movements. *Annals of the American Association of Geographers* 109(2): 581–592.
- Boyd W, Prudham WS and Schurman RA (2001) Industrial dynamics and the problem of nature. *Society & Natural Resources* 14(7): 555–570.

- Bracking S (2015) The anti-politics of climate finance: the creation and performativity of the green climate fund. *Antipode* 47(2): 281–302.
- Brannstrom C, Gorayeb A, de Sousa Mendes J, et al. (2017) Is Brazilian wind power development sustainable? Insights from a review of conflicts in Ceará state. *Renewable and Sustainable Energy Reviews* 67: 62–71.
- Bridge G, Bouzarovski S, Bradshaw M, et al. (2013) Geographies of energy transition: space, place and the low-carbon economy. *Energy Policy* 53: 331–340.
- Bruna N (2022) A climate-smart world and the rise of green extractivism. *The Journal of Peasant Studies* 49(4): 839–864.
- Camargo A (2022) Imagined transitions: agrarian capitalism and climate change adaptation in Colombia. *The Journal of Peasant Studies* 49(4): 713–733.
- Camargo A and Ojeda D (2017) Ambivalent desires: state formation and dispossession in the face of climate crisis. *Political Geography* 60: 57–65.
- Chayanov AV (1986 [1966]) *The Theory of Peasant Economy*. Madison: University of Wisconsin Press.
- Christophers B (2022) Taking renewables to market: prospects for the after-subsidy energy transition: the 2021 *antipode* RGS-IBG lecture. *Antipode* 54(5): 1519–1544.
- Chung YB (2017) Engendering the new enclosures: development, involuntary resettlement and the struggles for social reproduction in coastal Tanzania. *Development and Change* 48(1): 98–120.
- Chung YB (2020) Governing a liminal land deal: the bi-politics and necropolitics of gender. *Antipode* 52(3): 722–741.
- Chung YB (2024) *Sweet Deal, Bitter Landscape: Gender Politics and Liminality in Tanzania's New Enclosures*. Cornell University Press.
- Clapp J, Newell P and Brent ZW (2018) The global political economy of climate change, agriculture and food systems. *The Journal of Peasant Studies* 45(1): 80–88.
- Corbera E, Hunsberger C and Vaddhanaphuti C (2017) Climate change policies, land grabbing and conflict: perspectives from southeast Asia. *Revue Canadienne d'Études du Développement* 38(3): 297–304.
- Daley E and Pallas S (2014) Women and land deals in Africa and Asia: weighing the implications and changing the game. *Feminist Economics* 20(1): 178–201.
- Davies M, Guenther B, Leavy J, et al. (2009) Climate change adaptation, disaster risk reduction and social protection: complementary roles in agriculture and rural growth? *IDS Working Papers*: 320.
- De Vos R and Delabre I (2018) Spaces for participation and resistance: gendered experiences of oil palm plantation development. *Geoforum* 96: 217–226.
- Edelman M (2005) Bringing the moral economy back in... to the study of 21st-century transnational peasant movements. *American Anthropologist* 107(3): 331–345.
- Edelman M, Scott JC, Baviskar A, et al. (2016) *Critical Perspectives on Food Sovereignty: Global Agrarian Transformations*. London: Routledge, Vol. 2.
- Edelman M and Wolford W (2017) Critical agrarian studies in theory and practice. *Antipode* 49(4): 959–976.
- Elmhirst R, Siscawati M, Basnett BS, et al. (2017) Gender and generation in engagements with oil palm in east Kalimantan, Indonesia: insights from feminist political ecology. *The Journal of Peasant Studies* 44(6): 1135–1157.
- Eriksen SH, Nightingale AJ and Eakin H (2015) Reframing adaptation: the political nature of climate change adaptation. *Global Environmental Change* 35: 523–533.
- Fairbairn M (2020) *Fields of Gold: Financing the Global Land Rush*. Ithaca: Cornell University Press.
- Farbotko C (2010) Wishful sinking: disappearing islands, climate refugees and cosmopolitan experimentation. *Asia Pacific Viewpoint* 51(1): 47–60.
- Fash BC, Vásquez Rivera BC and Sojob M (2023) Pre-figuring buen sobrevivir: Lenca women's (e)utopianism amid climate change. *The Journal of Peasant Studies* 50(6): 2232–2258.
- Forsyth T (2013) Community-based adaptation: a review of past and future challenges. *Wiley Interdisciplinary Reviews: Climate Change* 4(5): 439–446.
- Franco JC and Borras SM Jr (2021) The global climate of land politics. *Globalizations* 18(7): 1277–1297.
- Fraser N (2021) Climates of capital. *New Left Review* 127: 94–127.
- Friedmann H (2022) Farming futures. *New Left Review* 138: 160–168.
- Gajjar SP, Singh C and Deshpande T (2018) Tracing back to move ahead: a review of development pathways that constrain adaptation futures. *Climate and Development* 11(3): 223–237.

- Galvin SS and Silva Garzón D (2023) The political life of mitigation: from carbon accounting to agrarian counter-accounts. *The Journal of Peasant Studies* 50(6): 2259–2282.
- Goodman D and Watts M (eds) (1997) *Globalising Food: Agrarian Questions and Global Restructuring*. London and New York: Routledge.
- Gramsci A (2000 [1926]) Some aspects of the southern question. In: Forgacs D (ed) *The Gramsci Reader*. New York: New York University Press.
- Grossman Z (2017) *Unlikely Alliances: Native Nations and White Communities Join to Defend Rural Lands*. Seattle: University of Washington Press.
- Guermont V, Iskander D, Michiels S, Brickell K, Fay G, Vouch LL, Natarajan N, Parsons L, Picchioni F and Green WN (2023) Depleted by debt: ‘green’ micro-finance, over-indebtedness, and social reproduction in climate-vulnerable Cambodia. *Antipode*. DOI: [10.1111/anti.12969](https://doi.org/10.1111/anti.12969).
- Guthman J (2004) *Agrarian Dreams: The Paradox of Organic Farming in California*. Berkeley: University of California Press.
- Hall R (2011) Land grabbing in southern Africa: the many faces of the investor rush. *Review of African Political Economy* 38(128): 193–214.
- Hardy RD, Milligan RA and Heynen N (2017) Racial coastal formation: the environmental injustice of colorblind adaptation planning for sea-level rise. *Geoforum* 87: 62–72.
- Henderson G (1998) *California and the Fictions of Capital*. Oxford: Oxford University Press.
- Hesketh C (2022) Clean development or the development of dispossession? The political economy of wind parks in southern Mexico. *Environment and Planning E: Nature and Space* 5(2): 543–565.
- Hosbey J, Roane JT, Rutledge E and Williams T (eds) (2023) *Black Ecologies*. New Brunswick, NJ: Rutgers Institute for the Study of Global Racial Justice.
- Huber MT and McCarthy J (2017) Beyond the subterranean energy regime? Fuel, land use and the production of space. *Transactions of the Institute of British Geographers* 42(4): 655–668.
- IEA (2023) *World Energy Investment 2023*. Paris: International Energy Agency.
- IPCC (2019) Summary for policymakers. In: Shukla PR, Skea J, Calvo Buendia E, et al. (eds) *Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems*. Geneva, Switzerland: Intergovernmental Panel on Climate Change (IPCC).
- IPCC (2023) Climate change 2023: synthesis report. In: Lee H and Romero J (eds) *IPCC, 2023: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team]*. Geneva, Switzerland: Intergovernmental Panel on Climate Change (IPCC), 35–115.
- Johnson L (2013) Index insurance and the articulation of risk-bearing subjects. *Environment and Planning A: Economy and Space* 45(11): 2663–2681.
- Juhola S, Klein N, Käyhkö J, et al. (2017) Climate change transformations in nordic agriculture? *Journal of Rural Studies* 51: 28–36.
- Julia J and White B (2012) Gendered experiences of dispossession: oil palm expansion in a Dayak Hibun community in west Kalimantan. *The Journal of Peasant Studies* 39(3–4): 995–1016.
- Kajiser A and Kronsell A (2014) Climate change through the lens of intersectionality. *Environmental Politics* 23(3): 417–433.
- Karlsson L, Naess LO, Nightingale AJ, et al. (2018) ‘Triple wins’ or ‘triple faults’? Analysing the equity implications of policy discourses on climate-smart agriculture (CSA). *The Journal of Peasant Studies* 45(1): 150–174.
- Kautsky K (1988 [1899]) *The Agrarian Question, Two Volumes*. London: Zwan Publications.
- Klein N (2015) *This Changes Everything: Capitalism vs. The Climate*. New York: Simon and Schuster.
- Klinger J (2017) *Rare Earth Frontiers: From Terrestrial Subsoils to Lunar Landscapes*. Ithaca: Cornell University Press.
- Knudson C (2018) One size does not fit all: universal livelihood insurance in St. Lucia. *Geoforum* 95: 78–86.
- Knuth S, Behrsin I, Levenda A, et al. (2022) New political ecologies of renewable energy. *Environment and Planning E: Nature and Space* 5(3): 997–1013.
- Koch N and Perreault T (2019) Resource nationalism. *Progress in Human Geography* 43: 611–631.
- Kusunose Y and Lybbert TJ (2014) Coping with drought by adjusting land tenancy contracts: a model and evidence from rural Morocco. *World Development* 61: 114–126.

- Lenin V (1977 [1899]) *The Development of Capitalism in Russia*. Moscow: Progress Publishers.
- Lennon M (2017) Decolonizing energy: black lives matter and technoscientific expertise amid solar transitions. *Energy Research & Social Science* 30: 18–27.
- Levien M, Watts M and Yan H (2018) Agrarian marxism. *The Journal of Peasant Studies* 45(5–6): 853–883.
- Li TM (2011) Centering labor in the land grab debate. *The Journal of Peasant Studies* 38(2): 281–298.
- Little P and Watts M (eds) (1994) *Living under Contract: Contract Farming and Agrarian Transformation in Sub-saharan Africa*. Madison: University of Wisconsin Press.
- Lund C (2018) Predatory peace: dispossession at Aceh's oil palm frontier. *The Journal of Peasant Studies* 45(2): 431–452.
- Maharjan S and Maharjan K (2018) Roles and contributions of community seed banks in climate adaptation in Nepal. *Development in Practice* 28(2): 292–302.
- Marx K (1963 [1869]) *The Eighteenth Brumaire of Louis Bonaparte*. New York: International Publishers.
- Marx K (1992 [1867]) *Capital: Volume 1: A Critique of Political Economy*. London: Penguin Books.
- Marx K and Engels F (1978 [1888]) Manifesto of the communist party. In: Tucker RC (ed) *The Marx-Engels Reader*. 2nd edition. New York: WW Norton and Company, 469–500.
- Matthan T (2023) Beyond bad weather: climates of uncertainty in rural India. *The Journal of Peasant Studies* 50(1): 114–135.
- McAfee K and Shapiro EN (2010) Payments for ecosystem services in Mexico: nature, neoliberalism, social movements, and the state. *Annals of the Association of American Geographers* 100(3): 579–599.
- McCarthy J (2002) First world political ecology: lessons from the wise use movement. *Environment and Planning A: Economy and Space* 34(7): 1281–1302.
- McCarthy J (2015) A socioecological fix to capitalist crisis and climate change? The possibilities and limits of renewable energy. *Environment and Planning A: Economy and Space* 47(12): 2485–2502.
- McCarthy J (2019) Authoritarianism, populism, and the environment: comparative experiences, insights, and perspectives. *Annals of the American Association of Geographers* 109(2): 301–313.
- McCarthy J and Thatcher J (2019) Visualizing new political ecologies: a critical data studies analysis of the world bank's renewable energy resource mapping initiative. *Geoforum* 102: 242–254.
- McCarthy J, Chen C, López-Carr D, et al. (2014) Socio-cultural dimensions of climate change: charting the terrain. *GeoJournal* 79: 665–675.
- McDermott Hughes D (2021) *Who Owns the Wind? Climate Crisis and the Hope of Renewable Energy*. London and New York: Verso.
- McDonagh J (2012) Rural geography I: changing expectations and contradictions in the rural. *Progress in Human Geography* 37(5): 712–720.
- McMichael P (2006) Reframing development: global peasant movements and the new agrarian question. *Canadian Journal of Development Studies* 27(4): 471–483.
- McMichael P (2009) Contemporary contradictions of the global development project: geopolitics, global ecology and the 'development climate. *Third World Quarterly* 30(1): 247–262.
- McMichael P (2013) *Food Regimes and Agrarian Questions*. Warwickshire: Practical Action Publishing.
- McWilliams C (2000) *Factories in the Field: The Story of Migratory Farm Labor in California*. Berkeley: University of California Press.
- Mehar M, Mittal S and Prasad N (2016) Farmers coping strategies for climate shock: is it differentiated by gender? *Journal of Rural Studies* 44: 123–131.
- Mills-Novoa M, Boelens R, Hoogesteger J, et al. (2020) Governmentalities, hydrosocial territories & recognition politics: the making of objects and subjects for climate change adaptation in Ecuador. *Geoforum* 115: 90–101.
- Mills-Novoa M, Boelens R, Hoogesteger J, et al. (2023) Resisting, leveraging, and reworking climate change adaptation projects from below: placing adaptation in Ecuador's agrarian struggle. *The Journal of Peasant Studies* 50(6): 2283–2311.
- Mitchell D (1996) *The Lie of the Land: Migrant Workers and the California Landscape*. Minneapolis: University of Minnesota Press.
- Monbiot G (2022) *Regenesis: Feeding the World without Devouring the Planet*. Penguin.
- Moore D (2005) *Suffering for Territory: Race, Place, and Power in Zimbabwe*. Duke University Press.
- Morton O (2015) *The Planet Remade: How Geo-engineering Could Change the World*. Princeton, NJ: Princeton University Press.

- Moyo S and Yeros P (eds) (2008) *Reclaiming the Land: The Resurgence of Rural Movements in Africa, Asia and Latin America*. London and New York: Zed Books.
- Moyo S, Yeros P and Jha P (2012) The agrarian question: past, present and future. *Agrarian South: Journal of Political Economy* 1: 1–10.
- Natarajan N, Brickell K and Parsons L (2019) Climate change adaptation and precarity across the rural–urban divide in Cambodia: towards a ‘climate precarity’ approach. *Environment and Planning E: Nature and Space* 2(4): 899–921.
- Nyantakyi-Frimpong H and Bezner-Kerr R (2015) The relative importance of climate change in the context of multiple stressors in semi-arid Ghana. *Global Environmental Change* 32: 40–56.
- Osborne T (2013) Fixing carbon, losing ground: payments for environmental services and land (In)security in Mexico. *Human Geography* 6(1): 119–133.
- Ossome L and Naidu S (2021) The agrarian question of gendered labour. In: Jha P, Chambati W and Ossome L (eds) *Labour Questions in the Global South*. Singapore: Springer, 63–86.
- Ouma S (2020) *Farming as Financial Asset: Global Finance and the Making of Institutional Landscapes*. Newcastle upon Tyne, UK: Agenda Publishing Limited.
- O’Brien K and Leichenko RM (2000) Double Exposure: Assessing the Impacts of Climate Change within the Context of Economic Globalization. *Global Environmental Change: Human and Policy Dimensions* 10(3): 221–232.
- O’Brien K and Leichenko RM (2003) Winners and losers in the context of global change. *Annals of the Association of American Geographers* 93(1): 89–103.
- O’Laughlin B (2009) Gender justice, land and the agrarian question in Southern Africa. In: Akram-Lodhi AH and Kay C (eds). *Peasants and Globalization: Political Economy, Rural Transformation and the Agrarian Question*. Routledge, 190–213.
- Paprocki K (2020) The climate change of your desires: climate migration and imaginaries of urban and rural climate futures. *Environment and Planning D: Society & Space* 38(2): 248–266.
- Paprocki K (2021) *Threatening Dystopias: The Global Politics of Climate Change Adaptation in Bangladesh*. Ithaca, NY: Cornell University Press.
- Paprocki K (2022) On viability: climate change and the science of possible futures. *Global Environmental Change* 73: 102487.
- Paprocki K and Huq S (2018) Shrimp and coastal adaptation: on the politics of climate justice. *Climate and Development* 10(1): 1–3.
- Paredes M and Kaulard A (2023) Forest as ‘nature’ or forest as territory? Knowledge, power, and climate change conservation in the Peruvian Amazon. *The Journal of Peasant Studies* 50(6): 2210–2231.
- Patnaik U (2012) Some aspects of the contemporary agrarian question. *Agrarian South: Journal of Political Economy* 1(3): 233–254.
- Perry K (2021) The new ‘bond-age’, climate crisis and the case for climate reparations: unpicking old/new colonialities of finance for development within the SDGs. *Geoforum* 126: 361–371.
- Prudham WS (2012) *Knock on Wood: Nature as Commodity in Douglas-Fir Country*. London and New York: Routledge.
- Purifoy DM (2022) Remote-Control Plantations and Black Forest Relations in the Black Belt. *Environment and Society* 131: 140–155.
- Reisman E and Fairbairn M (2021) Agri-food systems and the anthropocene. *Annals of the American Association of Geographers* 111(3): 687–697.
- REN21 (2023) *Renewables 2023 Global Status Report Collection, Global Overview*. Paris: Renewable Energy Policy Network for the 21st Century.
- Ribot J (2014) Cause and response: vulnerability and climate in the anthropocene. *The Journal of Peasant Studies* 41(5): 667–705.
- Rigg J, Salamanca A, Phongsiri M, et al. (2018) More farmers, less farming? Understanding the truncated agrarian transition in Thailand. *World Development* 107: 327–337.
- Rignall KE (2016) Solar power, state power, and the politics of energy transition in pre-saharan Morocco. *Environment and Planning A: Economy and Space* 48(3): 540–557.
- Roane JT, Femi-Cole M, Nayak P, et al. (2022) The seeds of a different world are already alive in the everyday practices of ordinary black and indigenous people’: an interview with JT Roane. *Curriculum Inquiry* 52(2): 129–138.
- Roane JT and Hosbey J (2019) Mapping Black Ecologies. *Current Research in Digital History* 2. Available at: <https://doi.org/10.31835/crdh.2019.05>
- Rosa L, Rulli MC, Ali S, et al. (2021) Energy implications of the 21st century agrarian transition. *Nature Communications* 12: 2319.

- Safransky S (2023) *The City after Property: Abandonment and Repair in Postindustrial Detroit*. Durham, NC: Duke University Press.
- Sarr B (2012) Present and future climate change in the semi-arid region of west Africa: a crucial input for practical adaptation in agriculture. *Atmospheric Science Letters* 13(2): 108–112.
- Scheidel A and Sorman AH (2012) Energy transitions and the global land rush: ultimate drivers and persistent consequences. *Global Environmental Change* 22(3): 588–595.
- Schneider-Mayerson M (2017) Some islands will rise: Singapore in the anthropocene. *Resilience: A Journal of the Environmental Humanities* 4(2–3): 166–184.
- Schwartzman G (2022) Climate rentierism after coal: forests, carbon offsets, and post-coal politics in the Appalachian coalfields. *The Journal of Peasant Studies* 49(5): 924–944.
- Scoones I, Borrás Jr, Baviskar A, Edelman M, Peluso NL and Wolford W (eds) (2024) *Climate Change and Critical Agrarian Studies*. London and New York: Routledge.
- Scott J (1998) *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, CT: Yale University Press.
- Sekine Y (2021) Emerging ‘agrarian climate justice’ struggles in Myanmar. *The Journal of Peasant Studies* 48(3): 517–540.
- Shattuck A, Grajales J, Jacobs R, et al. (2023) Life on the land: new lives for agrarian questions. *The Journal of Peasant Studies* 50(2): 490–518.
- Shinn JE (2018) Toward anticipatory adaptation: transforming social-ecological vulnerabilities in the Okavango Delta, Botswana. *The Geographical Journal* 184(2): 179–191.
- Singh D (2022) When green becomes saffron: caste, class, and identity conflicts in borderland India wind extraction frontier. *EXALT Webinar on Green Extractivism and Violent Conflict*. Helsinki: The Global Extractivisms and Alternatives Initiative, University of Helsinki.
- Stock R and Birkenholtz T (2019) The sun and the scythe: energy dispossessions and the agrarian question of labor in solar parks. *The Journal of Peasant Studies* 48(5): 984–1007.
- Stock R and Sovacool B (2023) Left in the dark: colonial racial capitalism and solar energy transitions in India. *Energy Research & Social Science* 105: 103285.
- Surprise K (2020) Stratospheric imperialism: liberalism, (eco) modernization, and ideologies of solar geoengineering research. *Environment and Planning E: Nature and Space* 3(1): 141–163.
- Taşdemir Yaşın Z (2022) The environmentalization of the agrarian question and the agrarianization of the climate justice movement. *The Journal of Peasant Studies* 49(7): 1355–1386.
- Taylor M (2013) Climate change, relational vulnerability and human security: rethinking sustainable adaptation in agrarian environments. *Climate and Development* 5(4): 318–327.
- Taylor M (2015) *The Political Ecology of Climate Change Adaptation: Livelihoods, Agrarian Change and the Conflicts of Development*. London: Routledge.
- Tenzing J (2020) Integrating social protection and climate change adaptation: a review. *WIREs Climate Change* 11: e626.
- Thaler Gregory (2024) *Saving a Rainforest and Losing the World: Conservation and Displacement in the Global Tropics*. New Haven: Yale University Press.
- Torres Contreras GA (2022) Twenty-five years under the wind turbines in La Venta, Mexico: social difference, land control and agrarian change. *The Journal of Peasant Studies* 49(4): 865–883.
- Van den Bold M (2023) *Greening Energy: The Politics of Renewables in Senegal*. Doctoral dissertation. Worcester, MA: Clark University.
- Van der Ploeg JD (2020) Farmers’ upheaval, climate crisis and populism. *The Journal of Peasant Studies* 47(3): 589–605.
- Van Sant L and Bosworth K (2017) Race, rurality, and radical geography in the US. *Antipode Interventions*, [Online]. Available from: <https://antipodeonline.org/2017/09/14/race-rurality-and-radical-geography/> (accessed 14 September 2019).
- Vergès F (2019) Capitalocene, waste, race, and gender. *e-flux Journal* 100: 1–13.
- Verma R (2014) Land grabs, power, and gender in east and southern Africa: so, what’s new? *Feminist Economics* 20(1): 52–75.
- Watts M (1996) Development III: the global agrofood system and late twentieth-century development (or Kautsky redux). *Progress in Human Geography* 20(2): 230–245.
- Watts M (2002) Chronicle of a death foretold: some thoughts on peasants and the agrarian question. *Osterreichische Zeitschrift für Geschichtswissenschaften* 13(4): 22–50.
- Watts M (2009) The southern question: agrarian questions of labour and capital. In: Akram-Lodhi AH and Kay C

- (eds) *Peasants and Globalization: Political Economy, Rural Transformation and the Agrarian Question*. London and New York: Routledge.
- White B, Borras Jr SM, Hall R, et al. (2012) The new enclosures: critical perspectives on corporate land deals. *The Journal of Peasant Studies* 39(3–4): 619–647.
- Whyte K (2020) Against crisis epistemology. In: Hokowhitu B, Moreton-Robinson A, Tuhiwai-Smith L, et al. (eds) *Handbook of Critical Indigenous Studies*. London: Routledge.
- Wilson J (2013) The urbanization of the countryside: depoliticization and the production of space in Chiapas. *Latin American Perspectives* 40(2): 218–236.
- Wolford W, White B, Scoones I, et al. (2024) Global land deals: what has been done, what has changed, and what's next? *The Journal of Peasant Studies*: 1–38. DOI: [10.1080/03066150.2024.2325685](https://doi.org/10.1080/03066150.2024.2325685).
- Yenneti K, Day R and Golubchikov O (2016) Spatial justice and the land politics of renewables: dispossessing vulnerable communities through solar energy mega-projects. *Geoforum* 76: 90–99.
- Zhao C, Liu B, Piao S, et al. (2017) Temperature increase reduces global yields of major crops in four independent estimates. *PNAS* 114(35): 9326–9331.

Author biographies

Kasia Paprocki is an Associate Professor in Environment in the Department of Geography and Environment at the London School of Economics and Political Science. Her work draws on and contributes to the political ecology of development and agrarian change.

James McCarthy is the Leo L. and Joan Kraft Laskoff Professor of Economics, Technology and Environment in the Graduate School of Geography at Clark University. His research interests include renewable energy, environmental politics, political economy, and political ecology.