

# Accumulation by adaptation

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## Abstract

Accumulation by adaptation names the phenomenon by which political and economic elites profit from climate adaptation efforts. As with the notion of 'accumulation by dispossession' from which it derives, the term speaks to the injustice of capital accumulation—in this case, accumulation associated with configuring some groups' vulnerability to climate change as business opportunities. However, unlike accumulation by dispossession, the mechanisms by which accumulation by adaptation proceeds have not been adequately conceptualized. This review synthesizes critiques of Marx's formulation of primitive accumulation, recent scholarship on colonial racial capitalism, and critical adaptation studies to locate how capital circulates through and reproduces the violence of climate change.

## KEYWORDS

accumulation, adaptation, climate vulnerability, colonialism, racial capitalism

## 1 | INTRODUCTION

In September 2018, a special conference on climate finance was held the day before the G7 meeting of Energy and Environment Ministers in Halifax, Nova Scotia. The keynote speaker was Michael Sabia, chief executive of Canada's second largest pension fund. His view of climate change was remarkably sanguine considering the nature and magnitude of socio-natural upheaval, both realized and anticipated: "Climate change and responding to climate change is an important investment opportunity. It's a profitable investment opportunity" (quoted in Tutton, 2018). Economist Nicholas Stern echoed this sentiment at the G7 meeting itself, where he noted that "climate action represents an opportunity to create \$26 trillion in economic growth and 65 million jobs by 2030" (G7 2018: 2).

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Compare these statements to Stern's earlier economic analysis of climate change, in which he and his colleagues characterized climate change not merely as a negative externality but as a "market failure on the greatest scale the world has seen" (Stern et al., 2006, p. 25). The positions appear to be a study in contrasts, but depictions of climate change as market failure or investment opportunity are only incongruent if one takes crisis to be an impediment to capital accumulation. Instead, crises are not only immanent to capitalism, but they are also instrumental to creating and opening markets for private investment and wealth extraction (Harvey, 2014; Klein, 2007). As Stern's comments indicate, climate change exemplifies the production—and productive potential—of capitalist crisis.

The aim of this paper is to trace how the climate crisis emerges from and reproduces 'colonial racial capitalism' (Koshy et al., 2022, see also Bhabra, 2021) through an analysis of mainstream climate change adaptation, primarily in the majority world (Global South). The populations most vulnerable to climate change, and thus in most urgent need to adapt to its impacts, are typically the most economically, politically, and socially marginalized (Leichenko and Silva, 2014; Thomas et al., 2019). To what extent and through what mechanisms does their vulnerability create opportunities for wealth extraction? With respect to the former, it appears to be quite a lot.

The valuation of adaptation investments is staggering. Finance industry insiders recently predicted the 'climate adaptation market' will reach \$2 trillion per year by 2026, 'making climate adaptation an untapped opportunity' for private sector investors (Shum et al., 2022, also Quinson, 2021). Seeking profits from the growing vulnerability to climate change of often already marginalized groups is emblematic of what some critical scholars describe as 'accumulation by adaptation' (Dawson, 2017; Eriksen et al., 2021a). While Dawson (2017) refers to Harvey's (2003) concept of 'accumulation by dispossession' as the inspiration for his own, present descriptions of accumulation by adaptation are merely schematic. However, the concept warrants methodical articulation of its mechanisms given the energetic pursuit of profitable investments from adaptation, as well as the creation of 'adaptation economies' in climate vulnerable places (Friedman, 2023). Therefore, this paper synthesizes literature on Marxist geography, colonial racial capitalism, and the political economy of climate change to determine how adaptation functions as an accumulation strategy (Smith, 2007).

## 1.1 | Accumulation and climate change

Karl Marx described the transition from feudalism to capitalism as a decades-long process of dispossession and class formation that he labeled primitive accumulation. Primitive accumulation was initiated in England through Parliamentary acts (especially during the 18<sup>th</sup> century) that enclosed and transferred communal lands to private ownership. Although enacted through thousands of Acts of Enclosure, this state-facilitated privatization of the commonwealth at once sequestered the means of production among capitalists and proletarianized the peasantry. Customary tenant farmers thus divested of their ability to self-provision subsequently resorted to wage labor, and Marx viewed accumulation as proceeding from then onward under the presumably free exchange of goods, services, and labor now rendered as commodities (Harvey, 2004).

While acknowledging the value of Marx's conceptualization of primitive accumulation, scholars have taken issue with its temporal, geographical, and social occlusions. First, describing these foundational processes of dispossession as 'primitive' or 'original' erroneously relegates them to the past and implies that their violent tactics are likewise no longer at play (Harvey, 2004; Zarembka, 2002). Meanwhile, by centering his analysis in England, Marx elided the ways that capital accumulation was wholly intertwined with and dependent upon slavery and colonialism abroad (Bhabra, 2021; Johnson, 2004; Wolfe, 2006). The limitations of Marx's spatial focus were mirrored in his devotion to the proletariat, which severely diminished his consideration of other subjects of capitalism. While European workers could potentially be unified through class struggle, colonial plantation economies—and the dizzying levels of commodity production and profit maximization they realized—hinged on the codification of racialized difference among laborers (Virdee, 2019). Accordingly, Coulthard (2014) argues for centering the subject position of the colonized rather than the wage worker, who has hitherto been the focal figure of Marxist scholarship (cf. Das, 2017).

Efforts to complicate and expand Marx's theory along temporal, spatial, and social lines have been complemented by work aimed at understanding the environmental consequences of capital accumulation. One subset of this scholarship documents how colonialism and primitive accumulation set climate change in motion by extracting the initial capital for subsequent accumulation through expanded reproduction (Hickel, 2020; Lewis & Maslin, 2015; O'Hara, 2009; Whyte, 2017). Eduardo Galeano (1971), for instance, notes that 18th century London received up to £50,000 (equivalent to ~£9,000,000 or ~ US\$10,500,000 today) of Brazilian gold per week. In South Asia, Britain siphoned approximately US\$45 trillion from India between 1765 and 1938 (Chakrabarti & Patnaik, 2018). The rapacious extraction of resources and decimation of Indigenous peoples abroad, coupled with primitive accumulation at home, led to the simultaneous enrichment of imperial states and impoverishment of colonies (Moe-Lobeda, 2016). They also provided the financial stimulus for fossil-fueled industrialization by enabling millowners to invest in costly coal-fired steam engines and thereby overcome labor and geographical constraints to production (Malm, 2016). Beyond their treatment as vast stores of resources, the rest of the world also became repositories of atmospheric, terrestrial, and aquatic waste as colonial powers churned through their ill-gotten wealth. One assessment of historical greenhouse gas emissions (1860–2015) finds the G-8 countries (United States, European Union, Russia, Japan, and Canada) responsible for 85% of excess emissions, a process that Jason Hickel terms 'atmospheric colonization' (Hickel, 2020). Colonial powers thus became the world's largest economies at the expense of both colonized territories and the global atmosphere.

Moreover, the extreme wealth and power disparities resulting from colonial racial capitalism established the conditions for highly uneven geographies of vulnerability to climate change impacts (Sultana, 2022; Whyte, 2020). Heightened sensitivity to climate change derives from colonial histories of wealth expropriation, as well as ongoing dynamics of indebtedness, structural dependency, and appropriation through unequal exchange (Hickel et al., 2021; Moulton & Machado, 2019; Sealey-Huggins, 2017). Inequalities in climate risk between and within states are apparent, for example, in the differential quality of infrastructure, which can either mitigate or magnify damages associated with extreme weather events (Parks & Timmons Roberts, 2006; Sheller and León, 2016).

Unequal exposure and sensitivity to climate change are undeniable realities of the contemporary configuration of (settler) colonial and post-colonial states, and addressing uneven vulnerability to climate change is a top priority of climate justice scholarship and activism. However, emphasizing the disproportionate impacts of climate change on marginalized groups can inadvertently reinforce a developmentalism built on racialized understandings of the Global South (and of minoritized communities in the Global North) as 'behind,' 'failed,' and in need of intervention (see Escobar, 2012; Koshy et al., 2022). Not only do occupied and formerly colonized areas suffer worse consequences from climate change, but their designation as vulnerable and requiring adaptation may perpetuate colonial relations and subject them to further exploitation (Cameron 2012, Lindroth & Sinevaara-Niskanen, 2014, Webber, 2016, Mikulewicz, 2020, Whyte, 2020).<sup>1</sup> It is this latter set of dynamics that I seek to unpack through a survey of adaptation and accumulation within colonial racial capitalism. Here, I take up Bhambra and Newell's (2022: 1) call "for caution and precision in the invocation of colonialism within climate change debates" by cataloging the colonial racial capitalist mechanisms by which accumulation by adaptation unfolds.

## 1.2 | Accumulation by adaptation

In its broadest sense, climate change adaptation refers to planned activities aimed at avoiding or minimizing the negative impacts of climate change. Adaptation measures may target infrastructure, institutions, social practices, or a combination of these to reduce a group's vulnerability to climate change. However, the drivers of vulnerability vary by historical, cultural, economic, and political context. Consequently, adaptation measures are often informed by the particularities of a given setting and may thus assume diverse forms (Fazey et al., 2010). Smallholder households in rural Liberdade in São Tomé and Príncipe, for example, shift or diversify their crops in response to drought (Mikulewicz, 2021), while the U.S. Army Corps of Engineers is spending billions of dollars on a 2700-foot-long sea

wall to combat storm surge in Norfolk, Virginia, primarily to protect the largest naval base in the world. Such examples illustrate the spectrum of adaptation measures, ranging from the autonomous, small-scale, and informal activities of individuals and communities to coordinated, official, and often capital-intensive projects occurring at larger scales—what Sophie Webber classifies respectively as little 'a' and big 'A' adaptation (Webber, 2016). When investors and their development agency brokers refer to an 'adaptation market,' they are invoking big 'A' adaptation, even if their ultimate success relies on decision-making, behavioral change, or technology adoption by individuals and households. By what means, then, do state, development, and financial actors generate profits from the climate insecurity of vulnerabilized groups?

Accumulation by dispossession (ABD) offers helpful if partial guidance. ABD largely focuses on the transfer of wealth, assets, and property from lower to upper classes and from vulnerable to richer states (Harvey, 2004). However, critical evaluations of ABD observe that the processes by which the state redistributes these resources are highly varied, and even verge on incoherent (Bin, 2018; Das, 2017). Moreover, Harvey's (2004) contention with Marx's conceptualization of primitive accumulation is primarily temporal, but as noted above, there are also colonial and racial dimensions to consider.<sup>2</sup> I turn, therefore, to colonial racial capitalism, as it powerfully organizes *expropriation*, *exploitation*, and *exchange* within a single framework (Koshy et al., 2022). It illuminates the profound devaluation of racialized labor and land necessary for capital accumulation (Bledsoe & Wright, 2019; Melamed, 2015). By combining colonial racial capitalism with critical adaptation studies, we can better apprehend the mechanisms by which accumulation by adaptation proceeds (Table 1).

## 2 | EXPROPRIATION

Expropriation entails the dispossession of property on unjust but often technically legal grounds. Crucially, the definition presupposes, and thus imposes, a property relation where relations to land as kin or actor may already exist (Koshy et al., 2022, see also Wolfe, 2006). In addition to land, labor may also be expropriated "by confiscating capacities and resources and conscripting them into capital's circuits of self-expansion" (Fraser, 2016, p. 166). Within adaptation regimes, the expropriation of land and labor facilitate capital accumulation through enclosure, exclusion, and privatization.

The literature indicates significant slippage between enclosure and privatization, which are closely linked but distinct concepts. According to Sovacool (2018: 183), "enclosure refers to when adaptation projects transfer public assets into private hands or expand the roles of private actors into the public sphere." This reading of enclosure hews closely to the definition of privatization as "the transfer of ownership or management of resources to the private sector" (Bakker, 2014, p. 476). But privatization does not automatically attend enclosure. Accordingly, I follow Christophers (2020), who frames enclosure as a form of *alienation* whereby land and other resources are made subject to private property rights. Distinguishing between enclosure and privatization highlights that land may still be public yet enclosed (e.g. state property) and thus exclude people from accessing resources or maintaining cultural practices. Such enclosures are enduring features of settler colonial relations in the United States, Canada, and Australia, among others, and can have important consequences for effective adaptation (Whyte, 2017).

### 2.1 | Enclosure

Adaptation measures may alienate people from communal resources such as land, water, and funding. This can occur when a state alters land use rules to impede traditional practices such as swidden agriculture, or when adaptation obscures or legitimizes land grabs (Franco & Borrás, 2019). Alternatively, powerful individuals may capture public assets or monopolize resources intended for collective adaptation benefits (Eriksen et al., 2021b; Mills-Novoa, 2023). For example, elites in Bangladesh speculatively seized land in anticipation of it being targeted for adaptation projects

TABLE 1 Mechanisms of accumulation by adaptation.

Dimension of colonial racial capitalism	Accumulation process	Examples	Representative studies
Expropriation	Enclosure	Land grabbing; water grabbing; elite capture of public assets; epistemic enclosure	Olmstead, 2014, Nightingale, 2017, Franco & Borras, 2019, Álvarez & Coolsaet, 2020, Rivera, 2022, Eriksen et al., 2021b, Browne & Razafiarimanana, 2022, Petrova & Ferrando, 2022, Mills-Novoa, 2023
	Exclusion	Eviction, displacement, forced resettlement; livelihood dispossession; denied access to resources; disenfranchisement	Milman & Arsano, 2014, Hunsberger et al., 2018, Paprocki, 2018, Sovacool, 2018, Henrique & Tschakert, 2019, Work et al., 2019, Mikulewicz, 2021, Warner & Wiegel, 2021, Mills-Novoa, 2023
	Privatization	Establishment of private property rights; transfer of ownership to private sector; replacing government employees with private for-profit contractors	Fieldman, 2011, Sovacool, 2018, Barnett, 2020, Alonso-Fradejas, 2021, Hardy et al., 2022
Exploitation	Extraction	Resource depletion; exploitation of [adaptation] labor; un-/under-compensated use of local knowledge	McDowell, 2013, Williams & Hardison, 2013, Lindroth & Sinevaara-Niskanen, 2014, Klenk et al., 2017, Paprocki, 2019, Thomas, 2020, Haverkamp, 2021, Johnson et al., 2023
	Commodification	Production for sale of expert knowledge, adaptation techniques, and materials (e.g. hybridized seeds, drip irrigation lines); payment for adaptation services	Käkönen et al., 2014, Webber, 2015, Venot, 2016, Goldman et al., 2018, Micale et al., 2018, Akter, 2020, Al-Amin et al., 2020, Barnett, 2020, Alonso-Fradejas, 2021, Friedman, 2023
Exchange	Marketization	Creation of markets for adaptation goods and services; developing market linkages as adaptation	Djoudi & Brockhaus, 2011, Taylor, 2013, Barnett et al., 2015, Vermeulen et al., 2018, Work et al., 2019, Friedman, 2023
	Investment	Loans, blended finance, public-private partnerships, tax incentives, subsidies for investors, impact investment	Pauw, 2015, Micale et al., 2018, Bigger & Webber, 2020, Bracking & Leffel, 2021, Ciplet et al., 2022, Thomas, 2023, (cf. Bordner et al., 2020)
	Financialization	Risk mitigation through financial instruments (e.g. insurance, green bonds, blockchain, debt payments, cryptocurrencies)	Grove, 2012, Johnson, 2013, Johnson, 2015, Jarzabkowski et al., 2019, Barnett, 2020, Bigger & Millington, 2020, Bracking & Leffel, 2021, Eddens, 2021, Perry, 2021, Ciplet et al., 2022, Simpson & Sheller, 2022

that would drive up its value (Sovacool, 2018), while powerful households in Madagascar acquired a disproportionate amount of adapted seeds and agricultural tools meant for wider distribution (Browne & Razafiarimanana, 2022). Finally, individuals and communities may also be alienated from their knowledge through epistemic enclosure that deems local and indigenous understandings of climate change as 'non-expert' (Petrova & Ferrando, 2022). On their own, epistemic enclosures delegitimize place-based knowledges, positioning affected communities outside the realm of expertise. Yet, they also enable other forms of accumulation by adaptation, such as the extraction of local knowledges and commodification of foreign knowledge products (see Extraction and Commodification, respectively).

Taken together, the enclosure of collectively held resources in the name of adaptation disrupts or severs vulnerable groups' life-affirming practices of access, claims, and governance regarding non-human nature (see Coombes et al., 2012). It parallels the seizure of the means of production that underpins primitive accumulation, serving as the first step in accumulation by adaptation.

## 2.2 | Exclusion

Exclusion is the inevitable corollary of enclosure. Perhaps the starkest cases are those that involve physically relocating people in pursuit of adaptation. One illustrative example is the 250-m-tall Diemer-Bhasha Dam in Pakistan, which engineers claim will reduce vulnerability to climate change by tempering seasonal fluctuations in water supply. However, the dam is expected to displace over 30,000 people across 32 villages, and those protesting the government's scant compensation have encountered extreme violence at the hands of riot police (Warner & Wiegel, 2021). Similar patterns of displacement in the name of adaptation, and state repression of opposition to them, have been documented in Eritrea, Burundi, Myanmar, and Cambodia (Franco & Borrás, 2019; Hunsberger et al., 2018; McDowell, 2013).

Beyond evicting people to advance adaptation projects, state agencies may also resettle groups to reduce their exposure to climate hazards (Arnall, 2014). In one case, the regional government of Gambella, Ethiopia initiated a Villagization Program in 2010, relocating 45,000 households from flood plains to higher elevation areas. However, the project's narrow focus on reducing flood risks resulted in greater livelihood insecurity as villagers were cut off from the river on which they depended for riverbank agriculture, water for livestock, and fishing (Milman & Arsano, 2014). Livelihood dispossession is also integral to the adaptation regime in Bangladesh, where the pursuit of shrimp farming as a strategy for adapting to coastal seawater intrusion is exacerbating soil and water salinization that undermines crop and livestock production (Paprocki, 2018).

The fact that these various exclusions engender greater insecurity for already vulnerable groups is dismissed by state and development representatives as unavoidable consequences of modernization and economic growth. The denial of peoples' customary access and rights to land and water, conducted in the name of adaptation, renders these same resources available to accumulation.

## 2.3 | Privatization

As noted above, the enclosure of resources makes them amenable to the introduction of private property regimes. The establishment of exclusive property rights enables the transfer of land, water, knowledge, and other resources—as well as decisions regarding them—to private interests. For many Indigenous scholars, the very notion of resources constitutes a violent abstraction that enables complex ecological processes to be extracted for colonial exploitation. Writing on the ways that resources are synonymous with colonialism, Diné geographer Andrew Curley (Curley, 2021, p. 79) explains, “Colonial regimes worked to erase kinship networks with notions of property and to view the world as a repository of ‘resources.’” The reconfiguration of land as alienable property rested on racialized notions of European cultivation as productive and improving land's value, in contrast to the Indigenous land-use practices colonial institutions deemed unproductive, inferior, and even destructive (Bhandar, 2018; Li, 2014). Yet, it is also important to recognize that marginalized groups do not uniformly resist propertization of communally shared interests and may even adopt private property relations to make their claims to entitlements legible within Western legal systems. Coombes et al. (2012) therefore stress the need to understand property as a process, rather than a thing, that may yield uncertain and ambivalent outcomes. Nonetheless, privatization is instrumental to accumulation by adaptation.

Neoliberal climate governance frames privatization as necessary for continued economic growth, which ostensibly generates adaptation benefits but instead primarily serves governmental, corporate, and non-profit organizations

(Alonso-Fradejas, 2021; Thomas, 2023). While private property redistributes and concentrates the commonwealth in the hands of a few, the absence of clear property titles may conversely exclude vulnerable groups from public resources. Such was the case when the U.S. Federal Emergency Management Agency denied disaster relief to descendants of formerly enslaved Georgians after Hurricane Irma in 2017 on the basis that they hold land as tenancy in common (Hardy et al., 2022). Adaptation interventions themselves are also privatized as development agencies outsource activities ranging from agricultural extension to infrastructure design and installation to for-profit contractors (Fieldman, 2011).

### 3 | EXPLOITATION

Once resources are enclosed and divorced from established systems of customary usufructuary rights, accumulation by adaptation proceeds through exploitation. As with expropriation, relevant resources may be material, labor, or knowledge-based, all of which may be extracted and commodified to create surplus value.

#### 3.1 | Extraction

The fossil fuel and plantation-based extractivism of colonial racial capitalism (re)produces the vulnerabilizing conditions that make climate adaptation necessary, but so too do neoliberal adaptation measures drive resource depletion. In coastal areas worldwide, the Dutch Ministry of Foreign Affairs, US Agency for International Development, Japanese International Cooperation Agency, World Bank, Inter-American Development Bank, and other development institutions have loaned billions of dollars to build water infrastructure such as embankments, sluice gates, and sea walls (e.g. Colven, 2020; Henrique & Tschakert, 2019). Although intended to mitigate inundation from floods and sea level rise, these structures have disrupted water and sediment flows, leading to biodiversity loss, erosion, fisheries decline, and loss of navigable waterways (Le et al., 2007; Lebel et al., 2010). Perversely, water management infrastructures also underpin extractive and degrading land-use practices, such as shrimp farming, that state and development agencies tout as adaptive to climate change (Paprocki, 2019).

In addition to adaptation-driven depletion of water, soils, and biodiversity, adaptation measures also exploit the labor and knowledges of vulnerabilized groups. For example, the Blue Gold project in Bangladesh aimed to reduce risks associated with floods, storm surge, riverbank erosion, and salinity intrusion through the construction and maintenance of circular, earthen embankments called polders. But, despite funding from the Dutch Government of nearly US \$62 million, the project relied on the labor of landless contracting societies mostly comprised of women (Thomas, 2020). Such 'climate adaptation labor' is distinct from that of professional adaptation planners and practitioners in that it is often invisibilized, devalued, and depleting (Johnson et al., 2023).

Indigenous peoples and other groups with intimate knowledge of their environments are also enrolled in adaptation measures through various forms of 'exclusive inclusion' (Lindroth & Sinevaara-Niskanen, 2014). Their knowledge is increasingly valued as relevant for adapting to climate change, but may be extracted, decontextualized, and subject to foreign norms and laws that fail to uphold customary rules of use (Klenk et al., 2017; Williams & Hardison, 2013). Situated knowledge is necessary for designing adaptation interventions and making them workable but is devalued in the political economy of adaptation. This calculus is evident in the differential treatment of local and foreign knowledge, whereby the former is extracted, and the latter is commodified.

#### 3.2 | Commodification

While governmental and development institutions recognize the value of locals' contextual knowledge, they accord to policy, scientific, and finance actors the status of 'expert' (Falzon, 2021; Webber, 2015). Again, the Blue Gold

project is exemplary. According to one project document, “The challenges to realize sustainable development within the polders are technically complex and institutionally demanding. *Dutch knowledge institutes and private companies in the water and productive sectors will introduce innovative approaches and technologies to find appropriate solutions in close coordination and cooperation with Bangladeshi partners*” (Blue Gold, 2012, p. 20, emphasis mine). In other words, the project asserts that the technical and institutional management of polders—structures that Bangladeshis have been administering for more than 60 years—exceeds local capacity and requires continued outside intervention. The ‘instrumental co-production of knowledge’ prefigured by notions of ‘coordination and cooperation’ echoes paternalistic, colonial knowledge hierarchies (Goldman et al., 2018; Haverkamp, 2021) and structures the commodification of foreign knowledge.

The vast majority of climate adaptation finance is delivered as loans, which not only makes low-income countries financially responsible for a crisis they did not cause, but also often stipulates that recipient countries employ foreign experts at exorbitant cost (Carty et al., 2020). International consultants earn several times the salaries of local specialists (Johnson et al., 2023), which is difficult to reconcile given that the top climatologists, hydrologists, engineers, and geologists in countries like Bangladesh and Vietnam train abroad at the same institutions and in the very programs as their Dutch, American, British, Japanese, and German counterparts. Once repatriated, this money subsidizes unsustainable, energy-intensive lifestyles in the consultants’ home countries.

Accumulation by adaptation also proceeds through the manufacture of commodities that promise adaptive benefits, including vulnerability assessments, risk maps, adaptation plans, and climate forecasts (Friedman, 2023; Käkönen et al., 2014).<sup>3</sup> In addition to adaptation planning products, the World Bank also repackages Green Revolution technologies such as hybridized seeds and drip irrigation (‘drip-kits’) as valuable adaptation tools (Ireland & McKinnon, 2013; Venot, 2016). While its claims are questionable given the Green Revolution’s checkered history (Patel, 2013), redistributive climate justice might entail widely sharing materials, instruments, and technical know-how. Instead, precarious groups are forced to buy these goods and services, their participation in adaptation commodity markets perversely refracted through their ‘willingness to pay’ for vulnerability reduction (e.g. Akter, 2020; Al-Amin et al., 2020; Micale et al., 2018).

## 4 | EXCHANGE

Capital must circulate to realize its continual expansion (Melamed, 2015). As the privatized and commodified resources described above indicate, climate adaptation has become another circuit for realizing profitable exchange. Accumulation by adaptation requires the creation of transactional spaces and connections to facilitate the exchange of adaptation capital, goods, and services, as well as the subsumption of socio-environmental precarity by capital (Smith, 2007). The latter entails the circulation of capital through vulnerable populations (investment) and the circulation of produced vulnerabilities through capital (financialization).

### 4.1 | Marketization

The growing need for adaptation worldwide has led to the creation of markets as arenas for trade and exchange, with the goal of reducing vulnerability to climate impacts. According to a World Economic Forum (WEF) article, “the [adaptation] market could be worth \$2 trillion per year by 2026, and the need for adaptation solutions will grow as climate impacts become more prevalent” (Shum et al., 2022). Indeed, development agencies position markets as necessary for provisioning adaptation solutions and overcoming the inefficiencies and capital constraints that presumably saddle public administrations (Bigger & Webber, 2020). Meanwhile, these organizations frame vulnerability to climate change in part as a function of economic isolation, therefore many adaptation interventions focus on increasing market enrollment and access (Friedman, 2023; Taylor, 2013). However, greater dependence on markets



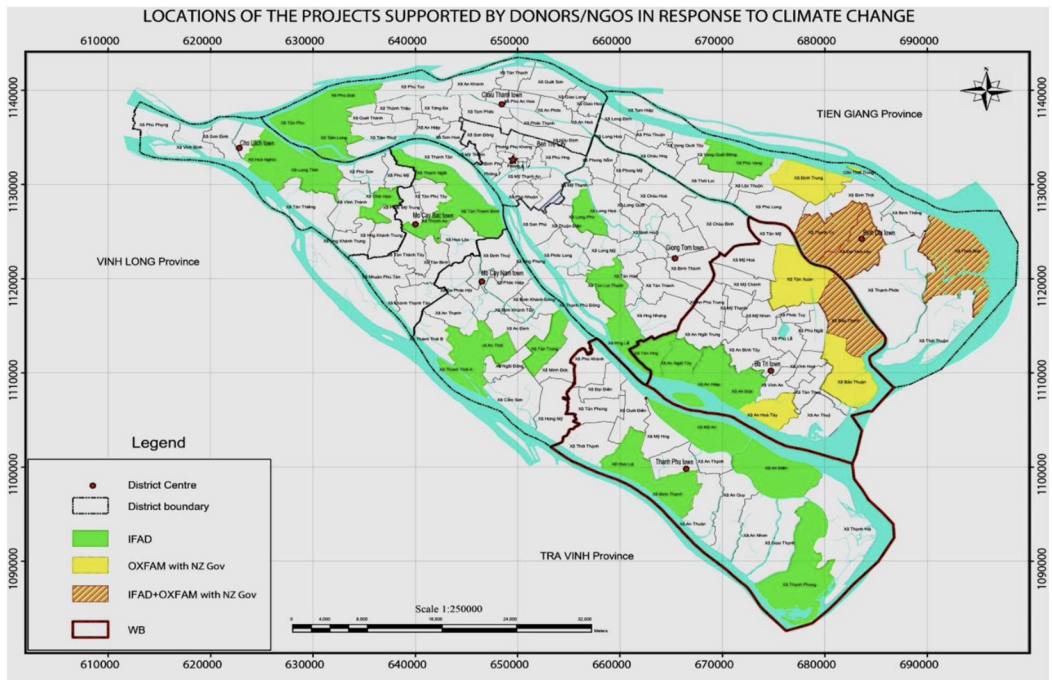
increases precarious groups' exposure to such risks as price shocks and competition (Felli and Castree, 2012; Thomas, 2023). Furthermore, shifting away from subsistence practices toward extractive commodity-based production often yields uneven benefits and resource degradation (Paprocki, 2019; Work et al., 2019). In the Coorong Lakes of Australia, water trading as a market-based instrument for dealing with drought has led to the reallocation of water to higher-value uses at the expense of downstream ecosystems and users (Barnett et al., 2015). Lastly, commodified adaptation goods and services attract private sector involvement precisely because they promise to be profitable. Thus, the WEF analysts cited above exuberantly conclude, "Investing in climate adaptation now means a chance at handsome financial returns while fighting climate change and helping the world's most vulnerable" (Shum et al., 2022). Within colonial racial capitalism, the potential to "help the world's most vulnerable" may entice private investment, but reducing vulnerability itself is incidental to turning a profit. Regardless of the adaptation outcomes, vulnerabilized communities become valuable sites of wealth extraction (Lindroth & Sinevaara-Niskanen, 2014; Turhan et al., 2015).

## 4.2 | Investment

The 1992 United Nations Framework Convention on Climate Change embodies fundamental principles of distributive justice (e.g. burden sharing, differential historical responsibility) by committing major economies of the Global North to finance adaptation in the Global South (Grasso, 2010). However, it omits important details, including whether adaptation finance should be disbursed as grants or loans, from public funds or private sources (Khan & Timmons Roberts, 2013). This vagueness deflects attention away from industrialized countries' responsibility and historical debt toward the massive 'adaptation finance gap' and how to bridge it by whatever means (Khan et al., 2020; UNEP, 2021). Consequently, government, development, and financial organizations go to considerable lengths to 'unlock' private adaptation finance, in part by making climate vulnerability attractive to investors (Thomas, 2023). Their efforts include 'de-risking' adaptation through public-private partnerships, subsidies, blended finance, and tax incentives that displace risk onto the public while minimizing costs and ensuring returns for private investors (Bigger & Webber, 2020; Bracking & Leffel, 2021; Pauw, 2015). Meanwhile, big 'A' adaptation investments typically manifest as loans with odious conditions that reproduce the colonial extractivism of their international development predecessors (Ireland, 2012; Nagaraj, 2015). Even funding that explicitly targets the most vulnerable may be directed along existing channels of political and ethnic patronage, thereby benefitting already advantaged households (Browne & Razafiarimanana, 2022). Funds, marked as adaptation finance but that routinely exaggerate their adaptation relevance (Weikmans et al., 2017), serve the interests of a global investor class and perpetuate the hegemonic status quo (Ciplet et al., 2022).

## 4.3 | Financialization

The financial sector's growing presence in the adaptation arena provides additional evidence of adaptation as an accumulation strategy. (Re)-insurance firms and development banks, for example, promote catastrophe and index-based insurance and financialized risk pooling as essential tools for climate adaptation (Barnett, 2020; Grove, 2012; Johnson, 2013; Peterson, 2012). Despite the rhetoric that insurance supports resilience and equity (e.g. Jarzabkowski et al., 2019), insurance strives to return disrupted systems to business as usual. It thus inhibits the transformation of the colonial racial capitalist processes that engender the climate crisis and vulnerability to it (Bernards, 2021; O'Hare et al., 2016). For instance, Jamaican authorities directed disaster insurance payments toward macroeconomic issues rather than damaged infrastructure (Grove, 2012). Meanwhile, the increasingly prohibitive cost of premiums under greater environmental variability produces 'splintering protectionism' that only covers remunerative properties and populations (Johnson, 2015). Green bonds, likewise, promise vital adaptation finance by designating the interest on institutional debt for projects such as flood management infrastructure. However, one study documented that the



**FIGURE 1** Map of districts where the World Bank, International Fund for Agricultural Development (IFAD), Oxfam, and New Zealand Government conduct climate change programming in Ben Tre Province, Mekong Delta, Vietnam. *Source:* JICA 2016.

downscaling of risk onto municipalities through green bonds reinscribes differential financial and environmental risk in New York City and Cape Town, South Africa, thus deepening existing social inequalities (Bigger & Millington, 2020). Keston Perry similarly locates the ways that such ‘innovative’ climate finance mechanisms herald a new ‘bond-age’ by generating wealth from ‘climate disaster, debt and dispossession,’ thus ‘reproducing racialized peripheries and extracting surplus value from...formerly colonized communities’ (Perry, 2021, p. 361, see also Eddens, 2021; Simpson & Sheller, 2022).

Finally, cutting across multiple dimensions of colonial racial capitalism is the administrative control that development agencies wield over land and labor overseas (Figure 1). Although post-colonial countries may no longer be actively colonized by occupying states, they continue to suffer under coloniality, which ‘survives colonialism’ (Maldonado-Torres, 2007, p. 243). There is a clear spatiality to accumulation by adaptation, whereby development agencies carve out their respective spaces for adaptation interventions, laying claim to landscapes through a competitive process to establish markets for their expertise (Thomas, 2023). As Kasia Paprocki (2018: 10) trenchantly observes of the adaptation regime in Bangladesh, “The map recalls those produced at the Berlin Conference during the Scramble for Africa, as do frequent comments by representatives of various agencies referring to their project sites in the possessive case (e.g., “That’s one of our polders”).”

## 5 | CONCLUSION

Critical adaptation scholarship has expanded from its early focus on maladaptation and uneven vulnerability to climate change to interrogate the political economy of adaptation. This more recent work grapples with questions about the politics and distribution of climate finance, the historical and ongoing colonial capitalist dynamics that make climate change adaptation necessary, and notions of climate debt and loss and damage, to name a few. In this

vein, 'accumulation by adaptation' has been gaining traction for its ability to highlight how political and economic elites transform vulnerabilized populations and places into objects for value extraction. However, the concept's utility to date has been restricted to that of a rhetorical device in the absence of a clear and methodical articulation of how adaptation measures facilitate capital accumulation. This review provides such a mechanistic analysis of accumulation by adaptation to illuminate its analytical *and* political potential.

The analysis builds on critiques of Karl Marx's primitive accumulation and David Harvey's accumulation by dispossession through a synthesis of colonial racial capitalism and critical adaptation studies. Colonial racial capitalism asserts that regimes of capital accumulation have always relied on racial and colonial logics and relations (Koshy et al., 2022). Consequently, it is impossible to understand how adaptation functions as an accumulation strategy without recognizing the colonial, imperial, and racial logics that structure capitalism.

In the past, colonial science used race to naturalize the violent seizure and occupation of territories based on the idea that superior European culture was needed to civilize native peoples and lead to their upliftment. Today, hierarchies of knowledge operate alongside those of race, whereby the scientific expertise uniquely held by European-descended researchers is used to justify both the intervention of foreigners in developing countries facing climate crisis and the ongoing extraction of wealth from former colonies through myriad accumulation processes (Table 1). This stance is just as meretricious as its race-based predecessor.

Eve Tuck and Wayne Yang challenge the superficial adoption of the language of decolonization, stressing that the "metaphorization of decolonization makes possible a set of evasions, or "settler moves to innocence", that...rescue settler futurity" (Tuck & Yang, 2012, p. 1). Powerful state, development, and financial actors and institutions employ a parallel strategy through the invocation of the climate emergency to secure their futures in and through climate vulnerable communities. Ongoing colonial theft masked as essential climate adaptation renders "innocent" the continued dispossession of vulnerabilized people and places of a financially-solvent present and a climate-secure future.

The processes of accumulation by adaptation described here are not new or inevitable, as research on post-adaptation powerfully demonstrates (Haverkamp, 2021; See et al., 2022). Yet, even with intensifying calls for transformative change, political and economic elites proceed to dispossess and proletarianize adaptation subjects under the guise of reducing their vulnerability. Interrogating emerging discourses about the 'adaptation market' exposes how long histories of expropriation, exploitation, and exchange manifest within the colonial racial capitalist climate-changed present.

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## CONFLICT OF INTEREST STATEMENT

I am the sole author of this work and declare no conflicts of interest.

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## ENDNOTES

- <sup>1</sup> Labeling individuals and groups as 'vulnerable' also risks depoliticizing and essentializing their vulnerability, misleading others to view it as an immanent characteristic rather than an outcome of uneven and power-laden social, political, and economic processes (see Barnett, 2020). Therefore, I use 'vulnerabilized' where possible, drawing on Marcus Taylor's (2015) notion of vulnerabilization, which focuses attention on the processes that create conditions of uneven social vulnerability.
- <sup>2</sup> Even as anticolonial, anti-racist, and indigenous scholars share Harvey's principle concern with dispossession, especially as it regards land (e.g. Coulthard, 2014).

<sup>3</sup> Note that adaptation products may be commercialized without being commodified (Webber, 2017).

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