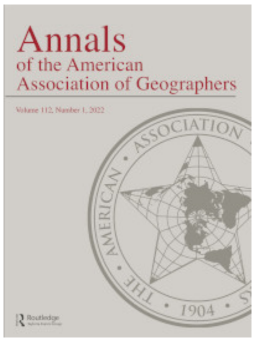

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Sean F. Kennedy

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The Power to Stay: Climate, Cocoa, and the Politics of Displacement

Sean F. Kennedy

Department of Urban and Regional Planning, University of Illinois at Urbana-Champaign, USA

Displacement due to environmental hazards such as sea-level rise and extreme weather has long been a prominent theme of climate adaptation and migration research. Although the relationship between climate adaptation and displacement is typically associated with the involuntary relocation of human bodies and livelihoods, in this article I offer an alternative perspective. Through an examination of recent trends in the Indonesian cocoa sector, I argue that fixing labor and capital in place—often in the form of smallholder producers—has emerged as a core strategy for corporate entities to manage the threat of their own economic displacement. Although this strategy enables corporate entities to maintain cocoa production in the face of economic and environmental disruption, the associated loss of smallholder mobility, constrained livelihood options, and new forms of financial dependency increase smallholder vulnerability to economic and environmental impacts associated with climate change. This work highlights emerging tensions between climate adaptation, displacement, and agrarian change while raising new questions concerning who and what is displaced and how in the context of climate adaptation in the Global South. *Key Words: climate adaptation, cocoa, displacement, Indonesia, vulnerability.*

The global cocoa industry—valued at over US$12 billion—is in crisis. Over the past two decades, aging tree stocks, pest outbreaks, and poor soil health have contributed to a rapid decline in cocoa productivity globally (Beg et al. 2017). Consumer demand for "sustainable" and "ethical" cocoa produced in systems certified as free from deforestation and child labor has required investments in production practices and supply chain management (Mithöfer et al. 2017). The rise of speculative cocoa derivatives trading has increased price volatility, introducing new forms of financial risk for producers, traders, and manufacturers (Purcell 2018). Climate models predict shifting rainfall patterns and increased temperatures will result in a 9 percent decrease in land suitable for cocoa cultivation by 2050 while also making trees more susceptible to pests (Bunn et al. 2017). These challenges have informed a range of cacao intensification initiatives, in which climate-related concerns are increasingly mainstreamed alongside longer-standing efforts to increase smallholder yields, improve livelihoods, and slow the pace of cocoa-related land change (Hafid 2017).

Indonesia is the world's fourth-largest cocoa producer, accounting for approximately 10 percent of global cocoa production (Food and Agriculture Organization 2020). In addition to the social and ecological challenges already outlined, the Indonesian cocoa sector faces a worsening labor shortage as a growing number of smallholders—who account for 95 percent of production—abandon cocoa production in favor of other commodities and livelihood strategies (Kelley 2020). Although Indonesian smallholders have long relied on diversified livelihood strategies to adapt to environmental and economic shocks (Salamanca and Rigg 2017; Kelley et al. 2020), these strategies pose challenges for cocoa traders and chocolate producers for whom adaptation is contingent on maintaining stable cocoa production and, by association, a stable supply of labor. Combined with the supply chain and production concerns previously outlined, this tension has informed new forms of cocoa governance, which, I argue, offers a lens through which to examine the ongoing politics of displacement in the context of socioeconomic and climatic change.

This article interrogates the motivations and techniques employed by cocoa smallholders and transnational chocolate manufacturers to ward off climate-related displacement in its varied manifestations. I use the term *climate-related* to decenter climate change as the sole force driving displacement while maintaining awareness of how climatic change

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articulates with underlying processes of economic and agrarian transformation (Salamanca and Rigg 2017). I begin by situating the article's theoretical contribution in the literature on climate adaptation, human mobility, and agrarian transformation. I then present a brief historical overview of the Indonesian cocoa sector and its relationship to displacement, before examining the transformation of these processes in the context of emerging governance frameworks led by transnational chocolate producers. In doing so, I cast adaptation not as a process limited to smallholder farmers and their environments but rather one deeply imbricated into global economic landscapes.

Borrowing from Harvey's (1982) theory of spatial fix, I argue that fixing labor and capital in place has emerged as a core strategy for corporate entities to manage the threat of their own economic displacement. I illustrate this point through an analysis of sustainability efforts employed by one major chocolate manufacturer, Mars Incorporated, highlighting specific ways in which adaptation in this context works not to ameliorate but rather to transfer risks from corporate entities to smallholder producers. I conclude with a brief discussion of the theoretical and practical implications of this work, particularly regarding the politics of defining vulnerability and the distribution of responsibility for climate-related risks.

Climate Change, Mobility, and Agrarian Transformation

Displacement has long been a dominant theme in climate adaptation research, often referring to the involuntary relocation of vulnerable people in response to sudden or extreme weather events such as droughts, storms, or floods (Bettini and Andersson 2014). In the classic pull–push framing of human mobility, displacement often implies movement induced by environmental, political, or economic push factors (Alexiades 2009). These push factors represent forms of external coercion, the absence of which, so the theory goes, would have obviated the need for relocation. Migration, displacement's voluntary other, also implies the presence of external force, yet one that pulls migrants toward locations characterized by desirable environmental, political, or economic factors deemed to be lacking in the point of origin. In both cases, however, mobility is framed as resulting from the presence of extraordinary circumstances, the absence of which would enable persons to otherwise remain in place.

Assuming human mobility is in some way unusual elides the fact that peasant societies have, in many cases, always been highly mobile (Alexiades 2009; Skeldon 2014). More than a one-off response to an external threat, mobility serves as a core element of livelihood strategies, particularly in agrarian contexts. In Southeast Asia, for example, mobility has been shown to support household well-being by facilitating flows of capital, labor, and information across multiple locations while also contributing to longer term shifts in resource control and land change, even in land-constrained environments (Kelley et al. 2020). Although specific migration decisions and patterns are spatially and historically contingent, the history and continued presence of highly mobile labor suggest that mobility is more the rule than the exception (Skeldon 2014).

The framing of the relationship between climate change and human mobility has direct implications for the design, implementation, and outcomes of climate adaptation interventions. Viewing mobility as both unusual and undesirable, adaptation efforts led by state and development institutions often aim to reduce vulnerabilities and build resilience to keep communities in place (Leckie 2013). In agrarian settings, these efforts often aim to support the viability of commodity production through measures such as increased market integration, microfinance, and risk insurance (Isakson 2015). The emphasis on improving the productivity of a single commodity crop overlooks the multiple income sources that comprise smallholder livelihood strategies, of which mobility and migration perform crucial functions (Rigg, Salamanca, and Thompson 2016; Kelley et al. 2020). Furthermore, scholars have argued that these forms of adaptation intervention hold the potential to generate additional types of risk—including financial risk—the management and distribution of which might ultimately serve to exacerbate existing vulnerabilities (Isakson 2015; Rigg, Oven, et al. 2016).

The apparent contradictions reflected in processes of maladaptation raise questions regarding how, why, and for whom adaptation interventions are developed and deployed. A growing number of scholars have argued that displacement is not solely an outcome of physical climate-related impacts but is also linked to strategies employed by more powerful interests as they work to adapt to a changing climate

(Isakson 2015; Thomas and Warner 2019). Others have focused on the discursive processes through which development organizations render populations vulnerable as a means of justifying outside intervention (Mikulewicz 2020). This work points to the varied and complex ways in which climate change as both discourse and biophysical processes can result in forms of displacement, but the consequences of efforts designed explicitly to minimize displacement are yet to receive similar attention.

Smallholder producers have long been targets of efforts to address the sector's production-related challenges through agricultural extension and subsidized inputs (Mithöfer et al. 2017). The success of these interventions, however, has been limited by a narrow focus on production and commodities, which overlooks the complexity of processes shaping livelihoods and livelihood decisions (Kelley 2020). In recent years, growing concern regarding climate-related supply chain disruptions has informed a wave of corporate-led climate adaptation initiatives, many of which target smallholder production practices as a means of managing climate-related supply chain risks (Mithöfer et al. 2017). "Climate-smart cocoa," for example, aims to transform and reorient farming systems to decrease greenhouse gas emissions, boost adaptive capacity, and improve productivity while supporting incomes (Nasser et al. 2020). As with earlier cocoa intensification initiatives, however, supporting commodity production rather than livelihoods might reinforce uneven power relations between smallholders and chocolate manufacturers, rather than creating the types of diversified and increasingly mobile livelihood opportunities increasingly necessary under climate change (Salamanca and Rigg 2017).

In what follows, I argue that fixing labor and capital in place—often in the form of smallholder producers—has emerged as a core strategy for corporate entities to manage threats to their own economic displacement. Following Harvey (2001), I leverage the multiple meanings of *fix*, referring to efforts by corporate and state actors to facilitate capital accumulation in the face of crises as well as the redirection of otherwise mobile flows into stationary objects, such as infrastructure. In contrast to Harvey's focus on the diversion of capital from the circuit of commodity production into the built environment, I examine how new configurations of cocoa governance attempt to transform mobile agrarian labor into spatially fixed cocoa producers. Although these strategies exist in tension with broader processes shaping the political economy of the cocoa sector and agrarian livelihoods—and are thus often incomplete—they nevertheless raise questions regarding the efficacy of climate adaptation efforts committed to maintaining existing agrarian livelihoods in situ.

The Rise and Fall of Cocoa in Indonesia

Cocoa was introduced in Indonesia during the colonial era. It was not until the 1970s, boosted by state-led development processes under the authoritarian Suharto regime, that commercial production began to take hold. Except for a few failed government estates in the 1950s, smallholders have dominated cocoa production, typically on plots of less than two hectares (Neilson 2007; Kelley 2018). In 1967, the Indonesian government introduced the Basic Forestry Law, a Dutch colonial–inspired reform that granted the newly independent Indonesian government legal rights over all land perceived as "unused" or "underutilized" (Peluso and Vandergeest 2001; Kelley 2018). In a process commonly deployed to legitimate land claims, large numbers of traditional swidden farmers in Sulawesi turned to cacao production as a means of securing land tenure (Hall 2011; Kelley 2018). In central Sulawesi, the presence of suitable and accessible land, much of which had been previously cleared, served as a draw for Bugis migrants seeking to relocate from more densely populated and violent regions to the south (Ruf, Ehrut, and Yoddang 1996; Li 2002).

Through the 1970s, the Indonesian government's efforts to reduce reliance on oil exports led to the widespread rollout of state-backed state extension services and subsidized agricultural inputs, many of which targeted tree crops such as cocoa (Barbier 1989). The economic success enjoyed by this first wave of cocoa smallholders and continued state support motivated subsequent waves of migration and saw the crop expand and displace existing land uses and socioecological relations (Ruf, Ehrut, and Yoddang 1996). In areas of upland Sulawesi long characterized by shifting agriculture and communal tenure regimes, the planting of cocoa—a permanent tree crop—wrought extensive social disruption (Li 2002). Cocoa expansion operated as a form of enclosure, excluding and rendering landless those land

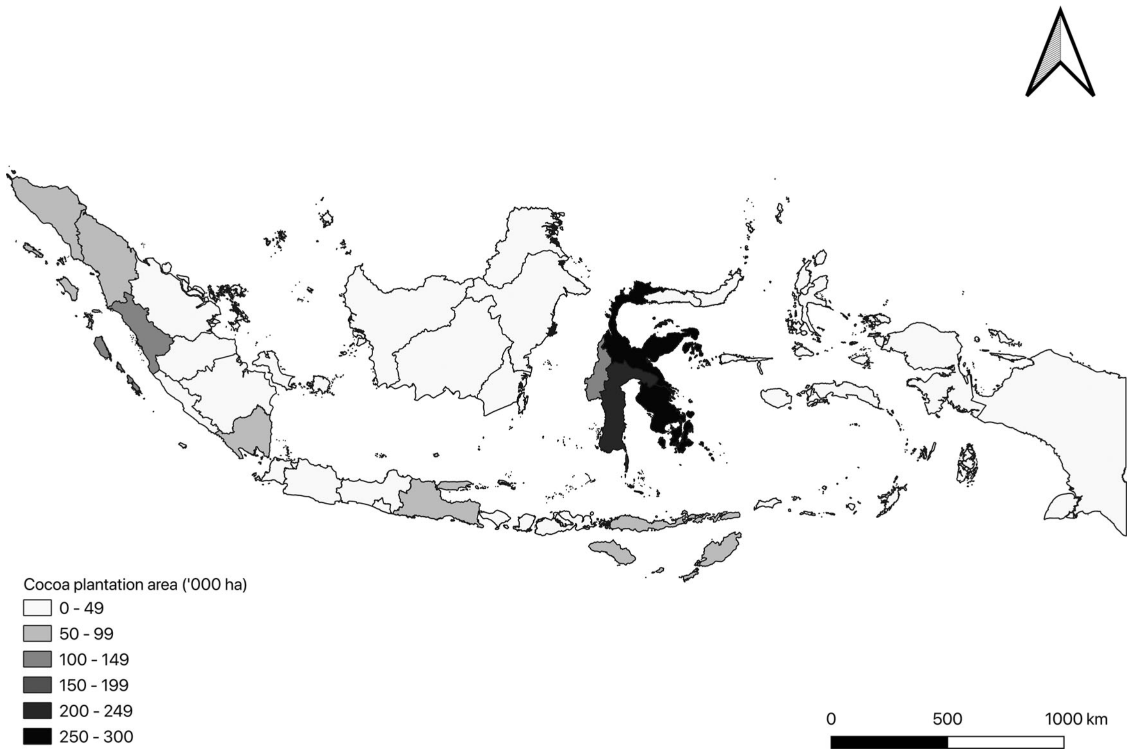

Figure 1. Cocoa plantation area by province, 2019 (BPS Indonesia 2020).

users formerly dependent on swidden agriculture. Rising global cocoa prices increased the economic value of land, making land inaccessible to those without access to capital, thereby exacerbating patterns of social differentiation (Li 2002). Simultaneously, the economic rents gained from cocoa cultivation enabled the continued accumulation of new, fertile land, allowing for increased production as the productivity of aging cocoa stocks began to decline (Ruf, Ehrut, and Yoddang 1996).

Production increased from 2,000 tons in 1970 to 850,000 tons by 2010, covering 1.65 million ha (Food and Agriculture Organization 2020), mainly concentrated on the eastern island of Sulawesi (Figure 1). By 2010, Indonesia was the third-largest exporter of raw cocoa beans, primarily serving processing and manufacturing facilities in Europe and North America (Mithöfer et al. 2017). Cocoa production generated significant financial gains for smallholders through much of the 1990s, with an estimated 2.2 million households accounting for 95 percent of production by the turn of the century.

The early 2000s were also a period of significant industry restructuring that prioritized farmer cooperatives over traditional trade networks, increased exporter consolidation and upstream involvement of international traders, and eroded traditional state-led farmer support structures (Neilson, Fauziah, and Meekin 2013). As predicted by Clarence-Smith and Ruf's classic "forest rent" thesis,[1] the production peak was followed by a steady decline in smallholder cocoa production due to aging trees, poor soil conditions; pests and disease, including the cocoa pod borer; and what observers view as outdated farming practices (Neilson 2007; Natawidjaja 2015). In the face of these challenges, maintaining cocoa production required additional pruning, pest management, and fertilizer application, increasing the labor intensity and production costs (Hafid 2017). Whereas smallholders had previously overcome threats to production through repeated cycles of expansion and displacement, a shortage of suitable land, due in part to the rise of exclusionary forest conservation efforts, and a decline in global cocoa prices prompted alternative strategies (Hoffmann et al. 2020).

In this context, recent years have seen an increase in conversion of cocoa production systems to other crops, with many smallholders opting to abandon cocoa production altogether in favor of off-farm employment or more lucrative and less labor-intensive crops such as oil palm, maize, and cloves (Mithöfer et al. 2017; Kelley 2020). The growing

Table 1. State and multistakeholder cocoa development initiatives, 2000–2020

Program	Dates	Funding	Objectives and approach
SUCCESS/SUCCESS Alliance	2000–2005	USDA, USAID, World Cocoa Foundation, American Cocoa Research Institute, Mars	Improve smallholder livelihoods by promoting cocoa production and marketing in an economically, environmentally, socially, and culturally sustainable way.
AMARTA Sulawesi Kakao Alliance (ASKA)	2006–2009	USAID, Olam, Blommer Chocolate	Improve farm productivity and increase farmer incomes through training in pest and disease control and cocoa management practices. Improve direct linkages between farmers and exporters. Increase farmer price leverage through information on the cocoa grading process.
Rural Empowerment and Agricultural Development (READ)	2008–2014	IFAD, Mars	Promote a sustainable improvement in the livelihoods of the rural poor in five districts of central Sulawesi.
Gernas	2009–2014	Government of Indonesia	Disseminate planting material, fertilizers, equipment, and payments to farmers to rehabilitate their farms and boost production.
Sustainable Cocoa Production Program (SCPP)	2012–2020	SECO, Barry Callebaut, Cargill, Ecom, JeBeKoko, Krakakao, Mars, Mondelēz International, and Nestlé	Increase farmer household income from cocoa. Reduce greenhouse gas emissions from the cocoa sector by 30%. Increase the competitiveness of an environmentally responsible and inclusive cocoa value chain.

Note: USDA = United States Department of Agriculture; USAID = U.S. Agency for International Development; IFAD = International Fund for Agricultural Development; SECO = Swiss State Secretariat for Economic Affairs. Information compiled from Hafid (2017), Moriarty et al. (2014), Mithöfer et al. (2017).

unwillingness of smallholders to engage in cocoa production has raised significant supply risks for cocoa traders and chocolate manufacturers reliant on smallholder production. In response, transnational cocoa traders and chocolate manufacturers have engaged in a raft of multistakeholder cocoa intensification initiatives. Despite the wide range of programs, the displacement of supply risks by increasing the productivity of smallholder producers has been a cross-cutting objective (Table 1).

In the following section, I examine the efforts of one major chocolate manufacturer, Mars Incorporated, to address worsening economic and environmental threats. Although Mars does not explicitly label these efforts as climate adaptation, studies suggest that many of the environmental impacts on production these efforts aim to address are predicted to worsen under climate change, exacerbating the characteristic bust tendencies associated with cocoa production. Reduced rainfall and increased temperatures in Sulawesi are likely to affect soil fertility, the spread of disease, and pod size in ways that will decrease overall tree productivity (Witjaksono 2016). This analysis therefore offers a window into how Mars might continue to adapt under increased climatic variation and how strategies employed by Mars shape the extent to which smallholders can also adapt in the context of broader socioecological transformations reshaping agrarian livelihoods and landscapes.

Mars: Fixing Smallholder Livelihoods in Space

U.S.-based Mars Incorporated (hereafter Mars) is one of the world's largest chocolate manufacturers and cocoa purchasers. Mars sources close to 400,000 metric tons of cocoa annually, with the majority coming from Cote d'Ivoire, Ghana, and Indonesia (Mars 2019). Like other chocolate manufacturers, for Mars, the combined impact of climate-related productivity declines, increased demand for certified chocolate, and the growing unwillingness of smallholder producers to engage in cocoa cultivation have resulted in significant supply threats. In response, the company has adopted a range of approaches akin to those promoted by other supply chain actors now mainstreaming climate into their intensification agendas, including increased vertical integration.

Vertical integration typically involves combining into one company two or more stages of production normally operated by separate companies. The approach adopted by Mars, however, has enabled the company to exert control over upstream activities without assuming the risks associated with owning primary production activities. At the heart of this approach are two strategies—standardization and the creation of financial dependencies—which together work to fix labor and capital in space in the face of challenges heightened by climatic disruption.

Standardization

Mars's direct involvement in Indonesia began in 1996 with the establishment of the first foreign cocoa processing factory in Makassar, Sulawesi. This initial investment increased Mars's demand for a stable supply of local inputs and thus served as an incentive for further upstream integration in the Sulawesi cocoa sector. Initially, Mars's attempts at vertical integration relied on agricultural outreach through farmer field schools, initially developed in Indonesia in the late 1980s to reduce insecticide use in rice (Moriarty et al. 2014). In 2000, Mars joined ACDI/VOCA and the World Cocoa Foundation to form the public–private Sustainable Cocoa Enterprise Solutions for Smallholders (SUCCESS) Alliance program. Funded by the U.S. Agency for International Development (USAID), the SUCCESS Alliance piloted farmer training in Sulawesi based on standardized good agricultural practices (GAPs), including more frequent harvesting, pruning, sanitization, and guidance on organic and inorganic fertilizing practices (Heinz 2019). The SUCCESS program was intended to transfer technology and knowledge of improved production practices to smallholders, yet a lack of incentives resulted in limited uptake of the practices (Neilson and McKenzie 2016).

In 2010, Mars committed to sourcing 100 percent of its beans from third-party certified suppliers by 2020. As with the SUCCESS program, the commitment to third-party certification enabled Mars to exert arm's-length influence over smallholder production practices without assuming the risks of complete vertical integration. Third-party certification positioned Mars to respond to growing consumer demands for certified cocoa, yet prohibitions on the use of chemical pesticides and fertilizers put the commitment at odds with the company's productivity objectives. In 2018, Mars shifted its reliance on third-party certification to 100 percent "responsibly sourced" and traceable cocoa by 2025 (Mars Wrigley 2020). Whereas production standards under the previous commitment were defined by third parties, "responsibly sourced" was defined internally, allowing Mars to promote and monitor intensive production practices that would otherwise contravene most third-party certification program requirements (Hafid 2017).

Standardization through multistakeholder interventions, third-party certification, and increasingly targeted monitoring has enabled Mars to target and attempt to address those production practices deemed responsible for worsening productivity declines in recent years. As scholars have noted, however, this approach has in many cases proved ineffective in boosting yields. As Kelley (2020) noted, the combination of long-term deterioration in smallholder value capture, shifts toward off-farm employment, and the myopic production and cacao-centric approach to development have continued to drive smallholders away from cocoa production. In this context, maintaining supply required interventions that deepen market relations between smallholders and the cocoa sector in general and Mars in particular. I argue that a vital element of these interventions is the creation of financial dependencies that collapse otherwise diverse and mobile livelihood strategies into the spatial fixity of cocoa production.

Financial Dependencies

Mars's certified sourcing efforts developed alongside the Mars Cocoa Sustainability Initiative. Launched in 2011, the cornerstone of the Mars Cocoa Sustainability Initiative was the establishment of the Mars Cocoa Academy and the related Cocoa Development Center/Cocoa Village Center (CDC-CVC) model. Although similar to the farmer field school approach employed under the SUCCESS program, the CDC-CVC model is more entrepreneurial in its design, with farmers operating as self-employed extension agents referred to as knowledge brokers. The model operates as a spoke-and-hub network, with one CDC supporting thirty CVCs and each CVC intended to support at least 100 farmers (Neilson and McKenzie 2016). The Mars Cocoa Academy in South Sulawesi is the centerpiece of the model, where farmers are trained as "Cocoa Doctors" certified to supervise CDCs or CVCs.

CDCs, owned and operated by Mars or an affiliate supplier, serve as distribution and training hubs, providing agricultural training, plant stock, fertilizers, and pesticides to farmers. Since 2013, Mars has trained 120 Cocoa Doctors directly through a network of four CDCs in South Sulawesi (Mars Inc. 2020). Given constraints on expansion into more fertile growing areas imposed by sustainability certification requirements, the CDC training focuses primarily on techniques to facilitate production intensification. The CDCs disseminate technology and seed stock developed at Mars's Cacao Research Centers, which, according to Mars, "work on improving the quality and productivity of cocoa in Indonesia by focusing on the breeding of superior clones, integrated pest management, soil management, and diversified farming systems" (Mars Inc. 2020). Although these include a range of GAPs such as pruning and regular harvesting, reaching the full productivity increase requires intensification through the application of fertilizer and pesticides (Moriarty et al. 2014).

CDCs are intended to support CVCs, small, independent businesses run by local entrepreneurs trained at a CDC. The Cocoa Doctors operating CVCs engage in a wide range of activities intended to consolidate the activities previously undertaken by local collectors and extension workers. These activities include selling approved plants and training smaller farmers. As part of the CVC requirements, participants must commit to a productivity package. In addition to participation in agronomy and business training from the Cocoa Academy and CDC, participants must demonstrate relevant infrastructure in place (nursery, warehouse, communication equipment) and access to sufficient credit—approximately US$6,000—to carry an inventory of inputs and tools. Credit is provided through microfinance arrangements with a local financial institution, with the participant's land typically serving as collateral (Hafid 2017).

In 2012, Mars entered an agreement with the International Fund for Agricultural Development (IFAD) and the Indonesian Ministry of Agriculture to jointly invest in the development of a new CDC as part of the second phase of the Rural Empowerment and Agricultural Development program (Natawidjaja 2015). Although Mars provided only a fraction (6.5 percent) of the US$5 million funding package, the opportunity enabled the company to extend its reach and control over additional smallholders while avoiding the direct assumption of any project risks.

Mars expanded the number of CDCs in 2012 through collaboration with the Sustainable Cocoa Production Program. Beyond the GAP module, other modules were added to the training materials, such as Good Environmental Practice, Good Financial Practice, Good Social Practice, and Good Business Practice (Heinz 2019). In 2014, the Sustainable Cocoa Production Program launched CocoaTrace, a smartphone app that allows field staff to collect georeferenced data such as farm location and size, buying stations, number of cocoa trees on the farm, productivity, prevailing diseases and pests, and the application rate of recommended practices (Swisscontact 2016). Data are shared with large buyers such as Mars, who can potentially use the tool as a means to enforce compliance with its internal production standards by refusing to purchase from noncompliant producers.

Since its launch in 2013, the CDC-CVC model has engaged more than 50,000 cocoa farmers in Indonesia to improve the quality and quantity of smallholder output (Mars Inc. 2020). Under the CDC-CVC model, farmers sell their cocoa beans directly to Mars-operated buying stations strategically located within the growing region (Neilson and McKenzie 2016). Although the direct supply chain is assumed to provide benefits in terms of transparency and price (Neilson and McKenzie 2016), this arrangement bypasses local traders and collectors who have long served to provide finance, fertilizer, and other extension services. In doing so, the model enables Mars to exert influence over smallholder production practices without establishing formal contractual obligations or commitments to higher farm-gate prices.

The emphasis on "harnessing the entrepreneurial spirit" of smallholders works to transfer risk from Mars to smallholders while also displacing the responsibility of government and corporate actors in delivering the extension services that have traditionally supported smallholder production (Neilson 2007). The productivity gains promised through CDC-CVC participation require significant investment in fertilizer, which in the absence of financial support entails a significant assumption of risk on the part of the smallholders. Productivity has been shown to vary considerably with climatic variation, regardless of fertilizer use (Hoffmann et al. 2020). Upfront purchases of fertilizer without the clear prospect of a higher yield—or higher returns given the global cocoa market volatility—translate into risks for smallholders. Credit providers also require land as a fixed asset of collateral (Hafid 2017). As such, the risk of default comes with the risk of land dispossession. This risk is compounded by the model's business-oriented design, placing smallholder entrepreneurs in direct competition with other producers. Together, standardization, debt, and competition work to reinforce each other. The result is smallholders producing cocoa in highly specified, input-intensive production systems in which debt obligations consume meager financial returns driven down by competition. Given that livelihood diversification and mobility are often contingent on resource availability (Skeldon 2014), smallholders engaged in this model are effectively fixed in space.

Conclusion: Climate Displacement Futures

In this article, I have argued against two common assumptions regarding the relationship between climate change and displacement: (1) that climate adaptation is a process limited to smallholder farmers and their environments, rather than one imbricated into global economic landscapes, and (2) that companies such as Mars play a role in ameliorating environmental risk through corporate sustainability efforts, whereas this is, in fact, a risk transfer.

The CDC-CVC model filled a vacuum in terms of the lack of local and state-sponsored cocoa extension programs. Whereas farmers had previously been beholden to local traders, they are now beholden to Mars-owned CDCs, which dictate production practices through purchase agreements. This dependency is a form of risk transfer from Mars—who previously faced risks of supply instability—to cocoa producers, who now bear the risks associated with fluctuating market and climatic conditions. These efforts combine the commodity production focus of previous cocoa intensification efforts with the antidisplacement framing frequently used to justify climate adaptation interventions, which is then used to justify maintaining existing agrarian livelihoods in situ. In this way, the system limits the potential for more diversified livelihood strategies that might otherwise be more resilient to economic and climatic disruption, effectively fixing smallholder livelihoods in space.

This is not to suggest that the efforts employed by Mars effectively constrain the livelihood options of all smallholders. As Kelley (2020) noted, cocoa intensification initiatives across Indonesia—including those supported by Mars—continue to demonstrate limited effectiveness in increasing productivity and improving livelihoods. This analysis, however, demonstrates how evolving approaches to address declining productivity might not only be ineffective in improving livelihoods but ultimately exacerbate forms of vulnerability otherwise addressed through more diverse and mobile livelihood strategies.

The failure to account for how corporate interests overlap with vulnerability means that we might miss how place-based stability—operating as a form of "spatial fix" (Harvey 1982)—can generate climate-related harms. In this case, the power relations produced through Mars's arm's-length vertical integration efforts worked not only to allow the company to exert control over smallholder production practices but also to influence definitions of vulnerability and the distribution of responsibility for climate-related risks. Specifically, narrowly defining vulnerability in terms of productivity enabled Mars to pursue forms of adaptation that do little to address conditions of precarity facing smallholder producers, which stem not from biophysical climate impacts but from the adverse incorporation of smallholders into broader circuits of accumulation (Natarajan, Brickell, and Parsons 2019). Similarly, by displacing the responsibility of government in delivering extension services and other forms of smallholder support, Mars has redefined environmental obligations and responsibilities within the nation-state, potentially paving the way for policy responses that bolster rather than reshape relations of production, driving new and worsening forms of climate-related risk (Bulkeley 2001). These findings highlight emerging tensions between climate adaptation, displacement, and agrarian change while raising new questions concerning who and what are displaced and how in the context of climate adaptation in the Global South.

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ORCID

Sean F. Kennedy http://orcid.org/0000-0002-1686-1193

Note

1. The forest rent thesis (Ruf and Yoddang 2001) argues that cocoa cultivation is dependent on "forest rent" in the form of good soil fertility and low levels of pests and disease. As the rent declines over time, the pioneer front experiences falling productivity, declining farm profitability, and eventually industry collapse.

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SEAN F. KENNEDY is an Assistant Professor in the Department of Urban and Regional Planning at the University of Illinois at Urbana–Champaign, Champaign, IL 61820. E-mail: seankenn@illinois.edu. His research interests include the political economy of renewable energy development, environmental governance, and agrarian transformation.