



Forest offsets and the California compliance market: Bringing an abstract ecosystem good to market



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ABSTRACT

Improved Forest Management (IFM) projects under the California cap-and-trade market allow production of new, non-traditional commodities: forest carbon offsets. Earlier analyses have considered forest offsets generated through tree planting in the Global South, as vehicles for sustainable development. However, the California IFM program is testing offset production in new geographic and forest management contexts: with offsets produced and consumed within the US on working (timber producing) forests. With data drawn from California IFM project design documents and in-depth interviews with carbon project developers, this study traces the development, sale, and maintenance of forest offsets, in order to map access to benefits along the commodity chain. Results reveal that the cost and complexity of rendering biological services ‘real’ for market legitimacy are reducing benefits to marginal landowners, who lack needed capital, knowledge, and technology to bring offsets to market. An important insight of this study is that the state has maintained power over program participation and offset supply through control of the forest offset methodology, creating a production process largely mediated by the state, adding risk and uncertainty to market participation. Findings provide an empirical example of neoliberal nature and offer broader lessons on governance and benefit distribution for ecosystem service commodity chains.

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1. Introduction

Atmospheric greenhouse gas (GHG) reduction markets are generating production of new and unusual goods called forest carbon offsets. Previous analyses have explored their creation in small, nascent markets in the Global South, through vehicles for sustainable development like the Clean Development Mechanism (CDM) (Brown and Corbera, 2003; Corbera and Brown, 2010). However, the 2012 launch of a regulatory cap-and-trade market in California expands their production into untested geographic and forest management contexts. This is done through an improved forest management (IFM) protocol, which incentivizes offset production on forests that are generally subject to commercial timber harvest. Three years into cap-and-trade market operation, it is now possible to assess California regulatory IFM market participation. We employ both a commodity chain analytic framework and Ribot and Peluso’s ‘theory of access’ to trace the development, sale, and maintenance of forest offsets, to test who benefits and how from

new carbon-based revenue streams (Ribot, 1998; Ribot and Peluso, 2003). With data collected through review of California regulatory IFM project design documents (PDDs) and in-depth interviews with carbon project developers, we ask: how are forest offset production and benefit flows operating in a managed forest context in the Global North?

We draw several findings from this research. First, IFM projects under California’s cap-and-trade market must address the challenge of rendering intangible goods ‘real’ for market legitimacy, echoing production hurdles in the Global South (Brown and Corbera, 2003). In California, legitimacy is achieved through costly and technically complex forest carbon inventory and verification, limiting participation of small-scale and economically marginal landowners and creating opportunities for technical experts and project financiers, who provide needed capital, knowledge, and technology to bring offsets to market. Second, because California’s IFM program was designed to accommodate working forests, market participants must often negotiate parallel commodity chains—those of forest offsets and traditional timber products—altering the actors and dynamics involved in offset production and creating a calculus between potentially competing revenue streams. Third, a significant insight from this study is that the state has maintained power over project design and offset sale through control of the

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forest offset methodology, resulting in a production process largely mediated by the state and dependent on legislative acts, adding risk and uncertainty to market participation.

This manuscript begins by considering forest carbon sequestration literature, both in the Global South and in California. We then review commodity chain analysis as a framework for investigating access to market benefits. Next we present the results of this research, including documentation of market participants in California's forest offset commodity chain, as well as detailed descriptions of the steps and relationships involved in offset production. This leads to a discussion of *how* and *by whom* benefits are accessed from California's carbon offset market. We conclude with broader lessons about commodification of abstract ecosystem goods.

1.1. Forest carbon production in the Global South

Early forest carbon markets were promoted as vehicles for sustainable development and tropical deforestation reduction, and involved offsets produced in the Global South, purchased by actors in the Global North. A prominent example is the Clean Development Mechanism (CDM), developed in response to the 1997 international climate mitigation treaty signed at Kyoto, which allows Northern countries to offset GHG emissions by financing offset projects in the Global South. Under CDM, forest landowners are paid to sequester carbon through afforestation and reforestation (i.e. tree planting). A later carbon governance mechanism, Reduced Emissions through Deforestation and Forest Degradation (REDD), was developed through United Nations Framework Convention on Climate Change talks in 2005, and expanded to REDD+ at the Bali negotiations of 2007. Under REDD+, payments flow from North to South in order to reduce forest harvesting and improve forest management.

Research of forest carbon production in the Global South has included the politics of negotiating program methodologies (Boyd et al., 2008), policy-related barriers to participation (Thomas et al., 2010), and the complexity and risk of forest carbon project development (Lecocq and Ambrosi, 2007). This literature has frequently centered on market access. For example, Corbera and Brown pointed-out that participating landowners are made dependent on third-party experts who render biological services tradable in markets through rigorous measurement and verification (2003, 2010). Economic geographers have critically analyzed the commodification of ecosystem services (ES) more broadly, considering both the challenges and consequences of fitting ES into the logics of neoliberal markets. Castree articulates six preconditions for converting ES into tradable goods: privatization, alienation, individuation, abstraction, valuation, and displacement (Castree, 2003). These denote separations that enable ES—such as sequestered carbon, biodiversity, or water—to be quantified, tracked, and ultimately sold-off as “credits,” which serve as their market proxies. With forest carbon, separation is achieved through inventory, verification, and registration, steps which measure and subjectively validate offsets for market sale. Because these processes authenticate offsets as commodities, researchers have described them as “legitimizing institutions” (Corbera and Brown, 2010, p. 280) and as “power tools of carbon finance” (Bumpus, 2011, p. iv).

Yet transforming carbon into saleable goods has profound ecological and social consequences. Knox-Hayes argues that ES commodification can exert pressure on ecosystems for accelerated production, leading to programs that are ecologically “ineffective or potentially counterproductive” (2013, p. 118). Others have highlighted the re-casting of global forest governance through carbon programs, which is accomplished by altering property rights and tenure regimes in favor of certain actors, allowing financiers, multinational corporations, and conservation NGOs to exert control over

land management decisions while undermining local authority (Cabello and Gilbertson, 2012). For example, Cavanagh and Benjaminsen found that NGO-funded reforestation efforts on national parkland in Uganda led to violent evictions of forest residents (2014). Also explicit are equity concerns, in particular for Indigenous Peoples whose customary tenure rights may be insecure and whose means of livelihood may be targeted as the source of forest degradation (Dressler et al., 2012; Naughton-Treves and Day, 2012). Local practitioners and implementers of REDD+ have sought to account for community and Indigenous groups' voices, to establish tenure rights and more equitable distribution of forest benefits (see case studies in Naughton-Treves and Day, 2012). Global REDD+ policies have also attempted to decentralize some elements of decision-making and to create community-level responsiveness, often mediated by policies at national or subnational levels (Angelsen et al., 2014; Ituarte-Lima et al., 2014).

The California market provides an opportunity to examine offsets produced and sold in a very different context—on managed forests within the US, under a regulated market, with different challenges, and presumably fewer uncertainties around land tenure and access rights than CDM and REDD.

1.2. California regulatory cap-and-trade market: creating new revenue streams for forest managers

While forest carbon markets in the Global South were established largely to facilitate sustainable economic development, California's regulatory forest offset market embodies different aims, namely the production of offsets sufficient in quantity and rigor to facilitate cap-and-trade market functioning. California's now nationally-expanded forest offset program is directed by an innovative IFM protocol, which was negotiated between politically powerful land trusts aiming to reduce private forestland fragmentation, and large commercial landowners who prioritized offset production on industrial timberlands (Schmitz and Kelly, 2016). This methodology creates a new potential revenue stream for working forests by allowing active timber harvest on project properties with partial crediting for carbon stored in durable wood products. Yet it also promotes production of ecological co-benefits, such as wildlife habitat, watershed improvement, and private land conservation, through provisions that encourage “natural” and sustainable forest management. By establishing the rules for program participation and prescribing a uniform carbon accounting framework (or performance standard) across all market entrants, the IFM protocol provides a backbone to the forest offset production process.

Yet landowner willingness to participate in California's regulatory forest offset market has until now been highly unknown. Research suggested that compared to predecessor voluntary forest carbon programs, California's regulatory IFM protocol may have a conservativeness, costliness, and prescriptiveness unfavorable to average landowners (Galik and Mobley, 2009; Galik et al., 2012; Gunn et al., 2011; Remucal et al., 2013; Russell-Roy et al., 2014). Caldwell et al. state that for this market: “carbon projects are not viable for all landowners and impose significant constraints on land-use” (2013, p. 60). Numerous feasibility studies indeed suggested small-scale landowners were unlikely to meet rigorous requirements for accounting, monitoring, and permanence (Charnley et al., 2010; Fischer and Charnley, 2011; Fletcher et al., 2009; Markowski-Lindsay et al., 2011; Miller et al., 2012; Thompson and Hansen, 2012; Wade and Moseley, 2011).

However, California's IFM protocol has compatibilities with more traditional timber management strategies, suggesting carbon and wood product production may supplement each other in specific situations, for instance commercialization of less

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