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The Neutral State: A Genealogy of Ecosystem Service Payments in Costa Rica

David M. Lansing^{a,#}, Kevin Grove^b, and Jennifer L. Rice^c

^aGeography and Environmental Systems, University of Maryland Baltimore County, Baltimore, MD, USA

^bGeography and Earth Sciences, Aberystwyth University, Llandinam, Aberystwyth, UK

^cDepartment of Geography, University of Georgia, Athens, GA, USA

#Corresponding author. E-mail: dlansing@umbc.edu

Abstract

Using the case of Costa Rica, this paper examines how ‘carbon’ became an identifiable problem for that state. We trace how, during the 1980s, rationalities of financialisation and security arose in this country that allowed for Payments for Ecosystem Services (PES) to emerge as an economic and political mechanism. Our central thesis is: this period initiated a government project of securing a viable future for the nation’s resources by linking them to global financial markets and international trade. This project of achieving resource security through economic circulation introduced new financial logics into forest management, as well as new modes of calculating the value and extent of the forest. These ways of framing resources found expression in the nation’s PES programme that is now central to the state’s goal of achieving carbon neutrality. Today, Costa Rica’s carbon flows are becoming territorialised as part of the nation’s atmosphere, biomass, people, and economy. This paper shows how carbon’s territorialisation did not begin with a concern for the climate, nor did it occur through diffusion of global climate policy to Costa Rica. Instead, carbon’s rise can be traced to locally specific ways of coping with the problem of resource security.

Keywords: policy genealogy, territory, security, neoliberalism, Payments for Ecosystem Services, Costa Rica

INTRODUCTION

In 2008, Óscar Arias, the then President of Costa Rica, announced that Costa Rica would become a carbon-neutral nation by 2021 (Marshall 2008). This plan will fuse the economy and the climate in new ways; greenhouse gas emissions will still proceed, but such emissions will be ‘neutralised’ through the purchase of carbon offsets derived from recently planted trees within Costa Rica (Dobles 2008). This effort will be coordinated by the state through its Payments for Ecosystem Services (PES) programme that pays thousands of landowners for the carbon sequestering properties

of their land (Pagiola 2006). The PES programme has provided the state with carbon sequestration rights that it can now sell to domestic carbon emitters, whose actions must be accounted for, and linked to the nation’s forests so that Costa Rica’s territory may become a space of carbon neutrality.¹

In this paper we aim to understand how ‘carbon’ was able to emerge as both an economic object and a political project for the state. Specifically we ask, what practices and rationalities allowed for carbon management to become an economic problem? We address this question in two ways. First, we will show that these policy mechanisms are grounded in long standing governmental concerns of balancing the relationship between security and circulation. Second, we will examine how the government techniques embedded within climate change mitigation policies are a point at which the state’s sovereign territory becomes strengthened. In the first case, the Government of Costa Rica has been managing these two contradictory processes with regard to many things: resources, populations, debt, finance, and war. We contend that it was through the development of techniques of coping with these

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twin governmental demands of the modern liberal state, that carbon was able to emerge as a 'graspable' object of governance.

This account of the rise of offsetting and PES is meant to be a compliment to, and a corrective of, dominant scholarship on these policies that describe them as emergent out of the accumulation needs of capital, and diffused to sites in the global periphery by dominant institutions and actors (Castree 2008; Büscher et al. 2014). Without denying the validity of such accounts, this paper locates the rise of neoliberal approaches to climate mitigation such as carbon trading not in the contradictions of capital, but in the contradictory demands of liberal governance, and the kind of governmental techniques they give rise to. We show in this paper that Costa Rica's attempt to cope with the twin demands of ensuring resource security and facilitating circulation of such resources through trade have allowed for new socionatures like 'carbon' to become both an economic and political object. Doing so, we aim to trace how carbon mitigation has so easily become a neoliberal project of its commodification for the Costa Rican state, and to show why such a market-based domain of thought was able to arise in the first place.

Our analysis also interrogates the spatial character of carbon's rise as a political and economic object, and thus a second approach to this question involves examining how the governmental techniques embedded within climate change mitigation policies are a point at which the state's sovereign territory becomes strengthened. In this case, the creation of a carbon-neutral economy is a political project that extends the state's sovereign authority in ways that strengthens the territoriality of the Costa Rican state through the development of techniques for coping with the governmental demands of security and circulation. This contention is in contrast to a number of scholars that have posed climate change as a 'deterritorialising' environmental problem, where the complexity and global nature of this crisis gives rise to climate governance regimes that reduce the nation-state to but one of many transnational networked actors and institutions vying to govern the climate and its effects (Betsill 2007; Okereke et al. 2009; Bulkeley and Newell 2010). Our account shows how efforts to mitigate and adapt to climate change create new territorial practices that can strengthen state territoriality. Costa Rica's efforts to become carbon neutral are part of a process that Löwbrand and Strippel (2006) have diagnosed as a "territorialisation of the carbon cycle", where global carbon flows become placed as part of national territories through forms of accounting associated with global environmental agreements (Lansing 2010; While et al. 2010).

Advancing these arguments, we show how the regimes of truth related to carbon's commodification were able to emerge out of diverse governmental practices. We suggest that such an interrogation is vital because the capacity of actors to challenge particular governance arrangements and assert their own imprint on environmental regulation often hinges on their ability to tie environmental changes into larger cultural understandings of threat and insecurity that often underpin these emerging regimes (Grove 2010). Thus, understanding

how and why such rationalities have come to be, and how they condition the kind of responses to environmental problems that are permissible, is a critical point of inquiry.

Thus, our story lies not in the rise of 'carbon neutrality' as an idea, but instead, how the primary mechanism for achieving it—PES—came to be a viable object of exchange and governance. To show this we engage in a genealogy of carbon offsetting in Costa Rica. A genealogy, in brief, is a way of thinking about how present conditions have come to be in a way that refuses any foundational categories or teleological processes (Foucault 1977). The adoption of carbon neutrality, and the rise of PES in Costa Rica was shaped by a complex series of events and actors within the fields of climate and forestry management. These include institutions and mandates surrounding the Kyoto Protocol, multilateral development agencies such as the United States Agency for International Development (USAID) and The World Bank that promote ecosystem service payments PES worldwide, and the creation of a global infrastructure of academic research on topics of carbon mitigation, carbon markets, and ecosystem services. These factors are important, and have allowed for carbon neutrality and ecosystem services to become an embedded policy mechanism within the Costa Rican state, and around the world. A genealogy, however, also looks beyond the immediate field of knowledge—in this case ecosystem services and climate mitigation—for factors that can account for change within a wider governmental apparatus. It ventures to unpack many of the political, economic, and cultural changes that allow for particular rearrangements of governmental and discursive elements to emerge. An understanding of how these wider changes are able to articulate with localised processes, actors, and interests are what allow for forms of reterritorialisation to have political force. The goal of this paper, therefore, is not to provide a comprehensive understanding of how 'carbon' became an economic and political object, but to trace how localised shifts in discourse and practice have allowed for carbon's status as a calculable economic object to have the force as a governmental project that it does (Foucault 1977; Philo 2007).

Our observations, therefore, are necessarily narrow. Specifically, we trace the emergence of particular logics of resource management that emerged during the 1980s and the early 1990s in Costa Rica—a time when the nation was suffering a tripartite series of geopolitical, ecological, and economic crises. Central to our approach is the idea that this period opened an opportunity for the nascent 'financialisation' of environmental governance. Our understanding of financialisation in this instance is as a cultural and economic process of reordering social and ecological relations around the imperatives of financial speculation (Martin 2002; Grove 2012). Our central argument is that the inculcation of financialised logic into forestry management had the effect of rendering 'the forest' as a commodified and spatialised container of carbon, and in so doing, territorialised carbon as a governable part of the nation's economy, people, flora and fauna. In short, we place carbon's territorialisation as a process that occurs through diverse practices of calculation and accounting that initially

had little to do with climate change or even carbon. Without denying the importance of ‘the climate’ as an organizing force for politics, our account of carbon’s rise to importance is intended to show the ways in which carbon’s territorialisation is linked to a wider governmental project—that of achieving environmental security through economic circulation. Tracing how these local and diverse rationalities coalesced into a territorially specific regime of climate management is this paper’s goal and central contribution.

The rest of the paper is structured as follows. In the next section we place our empirical narrative within the context of literature on the governmentality of climate change. Following this, we map the shifting rationalities toward ‘the forest’ and describe how the nation’s forest resources came to be valued in terms of securitised ecosystem services. Next, we discuss this discursive shift in terms of the financialisation of environmental management, with attention to the rise of debt for nature swaps within Costa Rica, and how such financialised logics later came to infuse PES. The following section then analyses how the introduction of financialised environmental governance reconfigured the state’s territorial practices. Following this, the penultimate section places this process within a wider understanding of security and territorialisation. We conclude by highlighting the analytic advantage of our approach.

GOVERNMENTALITIES OF CLIMATE CHANGE

Our investigation builds on the insights offered by a number of scholars who have examined how models for climate impacts (Grove 2012) and methods of accounting for carbon (Boyd 2010; Lövbrand and Strippel 2012; Gupta et al. 2012) are all ways of naming and understanding the world that bring objects of rule into being through specific rationalities. Such analyses are indebted to Michel Foucault’s (2003) concept of governmentality, the idea that modern rule emerged through disciplinary techniques for regulating individuals and governmental techniques for regulating and managing populations. Such governmental techniques enact a biopolitics of the population that attempts to bring individual thought and action in line with normative visions of ideal conduct (Foucault 2003). In the eighteenth century, normative visions of governance began to revolve around particular conceptions of security. In this case, ‘security’ is a rationality that sees the future as a source of uncertainty, yet charts a course for action through anticipatory techniques such as risk management and actuarial statistics (Anderson 2010). Such techniques seek to enable desirable circulations of people and things within an unstable socio-ecological milieu, and render an unpredictable future more governable by turning it into a predictable field of planning, order and control.

Such rationalities, however, are not static, and in the post World War II period, neoliberal governmental rationalities emerged that reframed risk, uncertainty, and security in liberal societies through the lens of what Foucault has called “marketisation”. This is a term that refers to “the generalisation

of the economic form of the market beyond monetary exchanges” (Foucault 2008: 243) in ways that condition everyday relations and activities through the values, practices and rationalities of financial speculation. The spread of financial rationalities throughout the social fabric is a process that occurs through the reconfiguration of state economy relations in ways that place the state apparatus as critical to the emergence of financialised logic and actions. Previously, the rationality of market liberalism sought to separate the state from the market, and the economy from society, so that the ‘natural’ market might flourish. In contrast, under neoliberal rationalities and governance, the state and economy become fully integrated spheres, with each fully open to redesign along the principles of the competition (Foucault 2008; Mirowski 2009; Fletcher 2010). Rather than limiting the state and allowing markets to flourish, neoliberalism describes an ongoing process of creating regimes of law and regulation that are meant to foster new forms of competition, fashion the entrepreneurial subjects of neoliberal ideology, and bring social, political, and cultural life in line with market rationalities (Anderson 2012).

Recent research has applied these Foucauldian insights on governmentality and neoliberalism to the production and maintenance of carbon markets. This research has focused on the techniques and practices that make carbon markets thinkable as domains of management through the involvement of scientific bodies, economic models, nongovernmental organisations and calculative devices (Callon 2009; MacKenzie 2009; Lansing 2012; Gupta et al. 2012). We seek to extend this form of analysis to understanding the tensions between carbon and territorialisation that occur through practices of climate governance. As a number of scholars have noted, the increasing displacement of the state as the sole actor in environmental regulations creates a void, once filled by its territorial, sovereign authority (Karkkainen 2004; Bulkeley 2005). Political authority becomes unmoored from its traditional grounds in the territorial state, leading to new spaces and new scales of environmental governance, such as translocal municipal government networks (Betsill and Bulkeley 2004; Bulkeley and Moser 2007), regional organisations such as the European Union carbon trading market (Bailey 2007; Bailey and Maresh 2009), and international climate policy regimes (Betsill 2007; Andonova et al. 2009).

Such insights drive home the point that the deterritorialisation associated with transborder phenomena is also coupled with reterritorialisations that rework the status and practice of territory (Bulkeley 2001; While et al. 2010). Territory is no longer seen as the locus of sovereignty and political authority, but is instead a political resource that social groups mobilise to construct new spaces and scales of governance (Cox 1998; Bulkeley 2005). The result is that territorial space is never fixed, but always constituted through specific practices and rationalities. Somewhat paradoxically, it can also mean that the state itself can rework territory by enacting policy that attributes global flows of carbon to specific places and actions within a polity’s territory (Rice 2010), a process that While et al. (2010: 86) describe as carbon’s “coming to ground”, where

carbon becomes territorialised (Löwbrand and Stripple 2006; Lansing 2010), and the ‘insides’ and ‘outsides’ of politics (Vandergeest and Peluso 1995) are remade anew through the placing of carbon within political space.

These varying practices of carbon’s territoriality are almost always described as being done in response to the global environmental problem of ‘climate change’. We contend that global processes of carbon governance necessarily articulate with local governing logics in ways that allow political actors to ‘grasp’ carbon as an economic object. Therefore, we will examine how carbon’s territorialisation emerged from the development of initially unrelated rationalities towards security and circulation that, in Costa Rica, were catalysed by a series of financial, ecological and geopolitical crises in the 1980s. In short, the government projects of securing the nation’s resources during this time lead to ways of accounting for, and thinking about, ‘the forest’ that allowed for carbon to become a graspable object of government and exchange, and ultimately, territorialised as part of the nation’s space.

SHIFTING RATIONALITIES OF ‘THE FOREST’

Throughout the 1980s, Costa Rica was managing a tripartite set of financial, geopolitical and ecological crises that set the context for the subsequent development of its PES programme, which serves as the precursor to the establishment of a carbon offsetting market. In July 1981, Costa Rica declared a moratorium on its debt payments. This initiated three rounds of structural adjustment loans by The World Bank in 1985, 1988 and 1993 (Marois 2005). During this time, the country was also under heavy pressure from the United States of America to abandon its explicit stance of geopolitical neutrality concerning the ongoing Contra-Sandinista war to the north, and to allow the US funded Contra fighters to stage attacks on Nicaragua from this country (Honey 1994). Because of its sudden geopolitical significance, Costa Rica also received large infusions of the US foreign aid during this time (1982–1985; the second-highest per capita in the world, after Israel; Edelman 1999). The aid money helped to blunt the effects of the economic recession while simultaneously granting the USAID enormous influence on state policy (Sojo 1992).

USAID, The World Bank and the International Monetary Fund demanded a number of dramatic changes to the state’s role in the economy, including the expansion of Costa Rican industry to new international markets and the lowering of tariffs, tax breaks for investment, and small devaluations of its currency (the *colón*). These changes also entailed eliminating a number of agricultural subsidies such as crop price supports, production credits, limits on food and machinery imports, and subsidised consumer prices for subsistence goods (Vunderink 1990). During this time, USAID established a number of ‘parallel state’ (Honey 1994) organisations to promote nontraditional exports and to buy out state sector companies (Vunderink 1990; Cerdas 1991).

Finally, Costa Rica was also in the middle of a slowly unfolding environmental crisis, as it was experiencing some

of the highest rates of deforestation in the world during the 1970s and the 1980s (Sader and Joyce 1988). While initially unaddressed by The World Bank and USAID, Costa Rica’s deforestation problem would become an object of concern for these agencies by the end of the 1980s, and a number of policies were put forth to effect a particular market-oriented change in how forests are managed and protected (more on this below). In short, these different crises—debt, geopolitical and ecological—and the forms of pressure and assistance that were subsequently brought to bear on the country, became a key moment in the entrenchment of market-based logics and the embrace of new methods for calculating and classifying the nation’s resources.

These new rationalities could be found in Costa Rica’s forest became tied to carbon through a number of diffused and contradictory responses to the country’s alarmingly rapid forest loss during the 1970s and 1980s. The country’s first serious attempt at stopping deforestation was the passage of a forestry law in 1986 that required landowners to obtain a permit for logging. This permit required a detailed management plan, including an inventory of the size of individual trees, the distribution of species on their land, and a long-term harvesting plan that shows the sustainability of the landowner’s intentions (Brocket and Gottfried 2002). Each plan was required to receive approval from the forestry office, with the landowner paying taxes on each tree felled. In theory, such a management plan would ensure a sustainable harvest of trees, but in practice, the permit system for managing and accounting for the country’s productive forests was widely regarded as counterproductive, with widespread cases of illegal felling and forged documents (Brockett and Gottfried 2002: 19). The plan did set the stage, however, for a series of new governmental technologies and governance innovations that allowed the state to collect information on and direct the activities of individuals in terms of proper forest management.

During this time—in the 1980s—USAID and The World Bank were also quite concerned about forest loss, and their concern reflected in the particular ways of positing these resources. Two crucial reports were issued by these agencies in the years 1989–1993 that reflected an evolution in thinking towards forest protection, and that shaped a particular conception of the market value of Costa Rica’s forest resources. First, USAID formulated a forestry project (called FORESTA) in 1989 that labelled the current land-use trends as an impediment to export-led economic growth. One of the principal problems USAID identified was the irrational use of the country’s potential, resulting in lands being logged that are unsuitable for long-term forestry. USAID framed this as a critical problem because, without a rational management of the country’s forest resources, forest imports would increase over the time and undo the macroeconomic changes that structural adjustment policies had achieved:

Unless drastic steps are taken immediately, by the end of the century the annual import bill for wood could range from [USD] 50 million to more than [USD]

200 million, cancelling many of the macroeconomic gains from stabilization efforts and increased exports to which the Mission has given priority in recent years. (USAID 1989: 4)

USAID's solution was for the country to better exploit commercially viable strands of forests in a sustainable way. And USAID's primary mechanism for doing this was to assist landowners in meeting the government's onerous requirements for sustainable management plans. This assistance was meant to help landowners better realise financial gains from harvesting trees from forest strands. Even so, in the same report, USAID also recognises that the forestry industry requires state subsidies if it is to survive:

It is unlikely that an enterprise, which manages forests on a sustainable basis could be financially viable in Costa Rica without some kind of government subsidy...because of the special features of forestry, such as its multiple benefits, which are not adequately valued in our economic system and its long time horizon, many forest activities merit government subsidies. (USAID 1989: 26)

Here, we see the early discursive appearance of the concept of PES; only in this report, it is baldly stated as a government subsidy.

This declaration, however, was probably the high water mark for this form of thinking about forestry in Costa Rican policy circles. A few years later, a second influential policy report concerning forestry surfaced that marked a decisive shift in the thinking about forestry support towards market instruments in the guise of PES. This report was The World Bank's 1993 review of Costa Rica's forestry sector (World Bank 1993). Similar to the USAID report from a few years before, this report highlighted the ecological value of forests. By this time, however, the idea of valuing environmental services had taken greater hold in the policymaking communities (Dempsey and Robertson 2012), and the report was replete with references to the global value of Costa Rica's forest resources and strategies for assessing the various values of different ecological aspects of the country's forest resources. It drew heavily on the work of Centro Científico Tropical (Tropical Science Center; CCT) and other organisations in the environmental policy communities that were trying to quantify the value of ecosystem services (Rojas and Aylward 2003).

In this report, ecosystem compensation was no longer referred to as 'subsidy' like the USAID's earlier report, but was decidedly shifted toward a discursive field, in which such services were written about solely through a grammar of market valuation. The connections between the 'services' of forests and their need to become market objects was central to The World Bank's forestry recommendations in 1993, and later provided a template for the Forestry Law in 1996 (Brockett and Gottfried 2002) that established PES in the country.

Understanding the differences between these two reports is vital, as they document a period in which a discursive shift

occurred among high level policy actors. In 1989, the 'value' of forests was a justification for state subsidies. By 1993, this same 'value' was to be mobilised in ways to render the features of forests (e.g., carbon sequestration, biodiversity) as market objects. This discursive shift ultimately resulted in a policy convergence between two powerful transnational actors (USAID and The World Bank) and the state concerning what forestry support is supposed to be (PES) and what it is not (state subsidies). This consolidation ultimately resulted in the Costa Rican state establishing its PES programme in 1997.²

This discursive shift also mirrors a shift in climate change policy more generally during this period. Oels (2005) documents it as moving from a state-based approach toward emissions regulations during the formation of United Nations Framework Convention on Climate Change in 1992, to five years later, the Kyoto Protocol in 1997 that has become more neoliberal, where the Clean Development Mechanism allows for carbon to be managed, in part, through market mediated carbon offsets. We suggest here that these discursive and policy shifts concerning both forest and carbon management, from state management to market mediated policies, is a rationality that reflects the wider financialisation of environmental governance as a whole. Within Costa Rica this is a process that has its roots in the state's 1980s debt crisis, and the infusion of financialised logics into resource governance in Costa Rica is the topic to which we now turn.

FINANCIALISATION OF FORESTRY MANAGEMENT

Some scholars have posited financialisation as a shift in capitalism that marks the rise of a finance-driven regime of accumulation, where, as Krippner (2005: 174) puts it: "profits accrue primarily through financial channels rather than through trade and commodity production." By this standard, Costa Rica's forests and ecosystems have yet to become financialised: accumulation through forestry is solidly in the realm of material products, and the country's PES programme remains largely a system of state-directed tax transfers to landowners, even if its policy architects aspire to someday sell and market a range of ecosystem service commodities. Rather than thinking about financialisation as a project of accumulation, we consider the cultural and discursive logics of this process, and how they become embedded within the management of firms, households, governments, and natural resources (Martin 2002; Grove 2012). Our concern, therefore, is about a slightly different process of bringing into being the economy and its objects, and the role that the logic of financialisation has played. In short, we contend that the emergence of 'carbon' as a discursive and material object of exchange, and the possibilities of exchanges of this sort, were able to emerge through the prior introduction of financial logics to political, cultural and economic understandings of the forest, and how they should be managed.

Our particular conceptualisation of financialisation, therefore, refers to a contested and uneven process of ordering social and

ecological relations around rationalities derived from financial speculation. Key here are the techniques of securitisation, and leverage, which extend the governance, environmental management, trade, and production modalities that emerged out of the crises previously described. Securitisation refers to the creation of various financial products—bonds, derivatives or stocks—out of place-specific risks, debts, or assets (Martin 2002). Such products can then be leveraged on global financial markets, a process in which market actors that take on such securitised risks are able to exert greater control over resources and processes than they would be able to influence otherwise (LiPuma and Lee 2004). Within Costa Rica, such sites of practice are diverse, and range from the rise of the biodiversity prospecting organisation *Instituto Nacional de Biodiversidad* (The National Institute for Biodiversity and Conservation; INBio) (Castree 2005) to a new quasigovernmental export promotion board financed and run by USAID (Shallat 1989; Clark 1997). A comprehensive understanding of the logics of such sites cannot be covered here. Our empirical observations are, therefore, necessarily narrow. In this case, we discuss debt for nature swaps as a way to illustrate how such logics became embedded as a governmental technique, and later came to pattern the rise of ecosystem services.

Debt for nature swaps began in the early 1980s when large conservation organisations began to leverage a developing country's debts to raise funding for conservation. These swaps are modelled on debt for equity swaps, a process whereby an investor, such as a commercial bank, will purchase a part of a firm's discounted debt on the secondary market and then exchange the debt for an equity interest in that firm. In a debt for nature swap, rather than an exchange in equity, debt is swapped for money directed toward conservation (Occhiolini 1990). The conservation payments are typically done by the government, and in local currency, which allows the government to avoid making currency conversions. The debt is often for a discount on the secondary market, and the debt purchaser, usually an environmental organisation, will often negotiate with the debtor country to forgive the debt in exchange for a 'redemption value', which is lower than the face value of the debt, but usually higher than the discounted price the environmental group paid on the secondary market (Cody 1988; Deacon and Murphy 1997). This presents an opportunity for environmental groups to leverage their money. Rather than investing one dollar in conservation infrastructure directly, they can buy ten dollars worth of discounted debt for that dollar, and later negotiate five dollars worth of conservation investments from the debtor country.

After the first debt for nature swap occurred between Conservation International and the Government of Bolivia in 1987 (a deal that resulted in the Beni Biosphere Reserve), Costa Rica began engaging in this process. In 1988, it sold USD 5.4 million in debt for USD 891,000 on the secondary market, and exchanged it for USD 4.05 million toward funding the National Parks Service, a quasigovernmental Costa Rican nonprofit. By the end of the 1980s, Costa Rica had exchanged USD 68.5 million in external debt for USD 37.65 million toward

preserving national parks, reforestation, and environmentally friendly cooperatives (Deacon and Murphy 1997).

Here, we note that, through this mechanism, nature is not directly 'swapped' for debt. Such deals rarely result in the outright purchase of land by foreign entities, because such arrangements are often too politically problematic (Cody 1988; Deacon and Murphy 1997). Instead, what the Government of Costa Rica exchanged for debt relief is the agreement to fund increased enforcement and management of already existing conservation areas. The point of the swaps, therefore, is to leverage money towards the enforcement of existing laws. Forms of conservation then become linked with the financial sector, and through these financialised governance arrangements, conservation organisations are able to come to exert control over how some resources are managed, without actually owning the resource itself. In this way, it is the governance that is swapped for debt relief.

This form of leverage enabled conservation groups to introduce a complementary rationality to the state and development agencies' market-based approaches, detailed in the previous section. This is a rationality of 'securing' nature through financial leverage. The worldwide debt crisis raised alarm bells throughout conservation circles at this time that this crisis would precipitate further rounds of deforestation and environmental degradation (Lovejoy 1984). And debt for nature swaps were meant to secure these existing stands of forests and wilderness before it is too late. On one register, this way of thinking about nature is not new. The World Wildlife Fund, for example, had long invested in management capabilities in Costa Rica and elsewhere around the world, and major global conservation organisations have had fortress-style conservation as their core mandate since their beginning. The difference here is that a rationality of environmental governance emerged that binds locally specific forms of environmental security to globalised flows of finance.

One can see signs of these rationalities in Costa Rica's PES programme. At the heart of this programme lies a paradox: farmers are paid not to cut down their forests when cutting down the forest is already illegal. The same law that brought into being PES in Costa Rica (Forestry Law No. 7575) also makes the felling of forests illegal (Navarro and Thiel 2007). In this way, landowners are being compensated to do what the law should already compel them to do (de Camino et al. 2000). We suggest that this seemingly redundant existence of both prohibitions and incentives occupies two different forms of governmental rationalities, each with its own spatiality and modes of promoting security. First, the law is against felling trees. In this case, it exists as a Cartesian diffusion of order across the nation's territory, in which the forest is to be secured through legally enforceable prohibitions. Second is a governmental logic of securing the forest through leveraging flows of currency to compel actors to act in their own rational interest. These are coincident rationalities that are, we argue, dependent upon each other. The law prohibiting felling trees is on the books, and indeed iterations of this law have been around since 1986 (Brockett and Gottfried 2002), but they

have only become salient with the introduction of a second governmental logic: its laws become enforceable through the state's connections with flows of currency, debt and global capital. In short, debt for nature swaps were an early instance of an ongoing linkage between security and circulation in environmental governance, where securing the forest means linking it to flows of finance as a means to ensure that the force of law has its intended effects, where the government is being paid to do what the law says it should do already. Through this early programme, financial flows became tied to the law, and as a result bound governmental concerns with security and circulation through debt for nature swaps, and later, PES.

TERRITORIALISING CARBON

In this section, we discuss how spatially explicit efforts to account for the country's forest resources produced forms of territorialisation that infuse the country's current efforts to become carbon neutral. In so doing, we consider the relation between practices of calculation and emergent modes of territorialising carbon (Löwbrand and Striiple 2006; Rice 2010). Our account draws on, and extends, the insights of political geographers who have argued that territoriality emerges out of a 'political arithmetic' (Elden 2005: 15), a mode of ordering that brings certain objects, relations, and processes into view and makes them legible to a calculative and administrative political rationality (Hannah 2009). Such calculative practices turn everyday activities enmeshed in context-specific webs of relations into abstract, discrete units of data that can become realised through state territoriality (Elden 2010). Such modes of territorialisation, therefore, disclose space as an object that can be totally knowable and controllable, whether this is the 'extended space' of the nation-state or the globe. Under this metaphysics of order, all beings, the totality of 'men and things' within a territory, gain standing through their relation to this space and are valued to the extent that they contribute to its productivity and well being (Walker 2009). We suggest here that the emergence of financialised environmental governance in Costa Rica provided both state and nonstate agents with a suite of rationalities and techniques for territorialising climate change through PES. This was a process that gave rise to new practices of state territoriality, and the reassertion of state authority, within a globalised political economy and environment.

The beginnings of this process in Costa Rica can be seen in the early 1990s, when a market-based forestry nongovernmental organisation—Fundecor—was formed through USAID financing and assistance (this organisation originated as the FORESTA NGO discussed above). Its goal was to increase forest cover by encouraging landowners to see their forests as potential sources of annual income (Gonzalez et al. 1998). Fundecor's strategy was to take on the burden of developing the state-mandated sustainable management plans on behalf of landowners as a way to encourage a more 'rational' use of their forestry resources (Brockett and Gottfried 2002). Prior to implementing this approach, however, one of Fundecor's

initial activities was to identify which landowners it should work with. In other words, it needed to answer the critical question of exactly where to focus its resources (de Vos 2003). Because Fundecor was founded as a USAID project, it had access to some of the most sophisticated geospatial tools in the country, which it used to diagnose where and how it would deploy its strategy (Obando 1998; de Vos 2003). Using variables such as population pressure, prior existence of forestry permits and distance from roads, the agency used a geographic information system (GIS) and remote sensing to develop a sophisticated map for elaborating its priority areas for reversing deforestation. It then used these spatial targets to determine which landowners it should assist in developing management plans (Obando 1998).

The use of geospatial tools quickly shifted from mapping priority areas of intervention to monitoring the forest management plans that Fundecor had developed. Having their forest management data in a GIS allowed Fundecor to quickly predict forest harvests over a ten year period, and ultimately to give landowners an advance payment for their forests' timber by selling future timber harvests (Obando 1998; de Vos 2003). Thus, Fundecor's use of GIS allowed its original work of smoothing bureaucratic hurdles for landowners to helping secure an uncertain future for farmers by providing up front payments, and overcoming the long 'time lag' between plantings and sale. Such efforts were relatively successful, and Fundecor was able to claim some success at halting deforestation in its areas of intervention (Watson and Ramirez 1998). Fundecor then went even further with their geospatial data by combining it with maps of forest types and tree growth rates in order to estimate the increased rates of carbon fixation its management interventions were encouraging. These estimations drew on ecological data produced by other research organisations in the country (Watson and Ramirez 1998). For example, the CCT developed a method for rapidly appraising an area's carbon content (Watson and Ramirez 1998). The CCT itself was able to draw on extensive scientific work that had been ongoing in Costa Rica, in which a range of forests had been sampled across a number of different Holdridge Life Zones (de Vos 2007). This diversity of carbon storage estimates was combined with Fundecor's geospatial data, ultimately allowing Fundecor to produce rapid estimates of the levels of carbon storage that their forestry interventions were producing (de Vos 2003).

In the mid 1990s, the Costa Rican state quickly seized on Fundecor's work as a way to reorganise the state's relationship with the forestry sector. Since the early 1990s, the state had been under pressure from USAID and The World Bank to decentralise its involvement in forestry and introduce more 'market oriented' strategies for forestry (de Camino et al. 2000). During this time, Fundecor produced the first maps showing the success of its approach to expanding forest cover, along with estimates of the carbon fixation value of the forests under its management. Using such data, it was also able to create and sell carbon sequestration offsets to the Government of Norway (Fundecor 1994; Rojas and Aylward

2003). The head of Costa Rica's Environment Ministry at the time seized on the 'scientific certainty' of these maps, and the organisation's success at selling an offset, as a means for the state to promote forestry through market methods (de Vos 2003: 168). Fundecor's exacting spatial calculations of its work, and the subsequent support from the Environment Minister, helped to establish the concept of carbon sequestration payments as a cornerstone of the country's new forest policy (Mora 1998). The end result was the passage of Forestry Law No. 7575, and the establishment of the *Fondo de Financiamiento Forestal de Costa Rica* (National Forest Financing Fund Costa Rica; FONAFIFO), a state agency charged with distributing ecosystem service payments, the value of which is based largely on rates of carbon sequestration (de Camino et al. 2000; de Vos 2003). In this way, Fundecor's ability to expand the coverage of forests in the area where it worked, and in turn, translate this success into payments for carbon sequestration helped to catalyse the emergence of a new state apparatus for encouraging carbon sequestration through forestry payments.

Today, through state-led and private efforts to develop carbon offset projects, 'the forest' has become a site of managed carbon flows that have become linked to a number of global and national climate governance efforts. During the negotiations over whether to include offsets as a part of the Kyoto Protocol, offset proponents used Costa Rica's early success at selling offsets as evidence, that including forests under the Clean Development Mechanism was a viable way to mitigate greenhouse gases (Mora 1998; de Vos 2003: 163). And now, the carbon sequestered in recently forested lands in Costa Rica is a site being leveraged as a key component of the state's goal of achieving domestic carbon neutrality by allowing domestic businesses and consumers to offset their actions by purchasing offsets linked to these trees (Dobles 2008). While the initial success of selling offsets to Norway could hardly be considered a form of market financing, the techniques and practices that were used to see the forest gave rise to particular logics of management that allowed for this sale to occur, and posited forests in new ways. In a relatively short time 'forests' became conflated with 'carbon', and this discursive act of adequation has resulted in a shift, from a governmental concern over securing the forest, to managing the nation's carbon flows. The result is that 'carbon' has emerged as an economic object in ways that have enabled the state to emerge as the regulator of its flows within its own territory—a territory that is now enframed as a space of carbon neutrality.

TERRITORIALISING SECURITY

Costa Rica's plan for carbon neutrality in 2021 is an attempt to account for the greenhouse gas emissions in its atmosphere by linking them with the carbon stored in its forests. This was a process that had its beginnings in an initial concern with securing the forest resources of the nation, and was grounded in diverse, and initially unconnected, governmental rationalities. Transnational actors began to frame the nation's resources in terms of financial and trade flows. Debt for nature

swaps allowed for 'forest management' to become defined by, and linked to, leveraged value found on global debt markets, while USAID discursively linked commercial forest resources to flows of trade, and in so doing, framed deforestation as a threat to its macroeconomic stabilisation policies. For USAID, securing the forest was a project of consolidating its structural adjustment objectives. Meanwhile, various ways of accounting for the nation's trees began to coalesce: Leslie Holdridge's development of his 'life zone' approach to ecosystems; CCT's synoptic estimates of carbon content across the entire territory; precise yet impractical forestry management plans; Fundecor's ability to link forestry management with carbon estimates in a compelling geospatial format. These forms of accounting for trees were woven together in ways that allowed the state to develop forestry policies that were grounded in seeing trees as potential sources of carbon storage.

From such framings of the forest as a stock of carbon to be managed, and as a resource linked to trade and debt, it became a short step to leveraging the forest as a key component of a future socioecological order of climate neutrality. What this empirical story shows is that diverse forms of calculation and assessment were also powerful forms of territorialisation in their own right. Amid a political economy, in which the state was under pressure to implement market oriented forms of environmental governance, and in which, there was international concern for climate change, these ways of understanding the resources of Costa Rican nation coalesced into a new way of understanding state territory, where its forests are more than sources of lumber or ecosystems for biodiversity protection but are also spaces of carbon storage to be sold. As our genealogy shows, this understanding of the forest emerges through governmental concerns not only about securing the nation's dwindling forest resources but also securing a particular kind of economy—one with less debt and a more favourable balance of trade. In this way, as the forest became accounted for in new ways, it was also explicitly linked to considerations of debt, finance and trade. Through these practices, 'carbon' and 'climate' were rendered visible, and the nation-state's territoriality was thereby brought into being in new ways.

What allowed this to happen were a number of diverse ways of dealing with the insecurities brought on by the country's crises in the 1980s. The Contra War in Nicaragua resulted in a struggle to maintain the nation's geopolitical security in the face of heavy US pressure to participate in the war (Honey 1994). The debt crisis that began in 1981 led to a preoccupation with securing future financial flows through World Bank loans, as well as maintaining a favourable balance trade so as to retain USAID's self-described 'macroeconomic gains' from its policies. Finally, the high deforestation rates from the previous decades brought the security of the nation's forest resources to the forefront. This eventually resulted in USAID's and The World Bank's visions of resource security, a vision that introduced financialised logics into forest management. In all three cases, concern over security lead to an opening up of the country to various kinds of circulations. Rather than enter

the Contra War directly, Costa Rica allowed US paramilitary groups to covertly operate within the country (Honey 1994). The solution to the insecurities posed by debt was to throw open the country to increased trade and investment. And the problem of natural resource security—the problem we have focused on in this paper—called for landowners to see their trees as potential exports to be properly managed.

The entwining of security and circulation is not contradictory, but rather, what modern liberal forms of security have become. As Foucault details through the example of town planning in the eighteenth century, security is a matter of enabling circulation between a territory and its surroundings (Foucault 2007: 1–27). This is a mode of security that does not rely on borders and exclusion, but rather, is grounded in the ‘inclusion’ of abnormal and threatening bodies through regimes of knowledge and administration (Anderson 2012). The point of security, therefore, is not to prevent the unexpected, but instead to allow aleatory events to unfold in a way that maximises the transactional economy of social and ecological circulation (Dillon 2007; Grove 2010).

While the early governmental rationalities of modern Europe juxtaposed security and circulation through the practice of ordering town plans, in Costa Rica today, practices of securing circulation have resulted in a volumetric securing of territory (Elden 2013), in which the soils, people, machinery and the atmosphere are stitched together through their relation to carbon. Not unlike the leper of the eighteenth century town, greenhouse gases are no longer banished to the ‘outside’ of the nation-state, part of the anarchic international realm that exceeded management and control within the territorial form of the state. Instead, they have become a point of inclusion, territorialised by the Costa Rica through financialised logics of the commodity. As our genealogy of the rise of PES in Costa Rica shows, this is a process of securing terrestrial and atmospheric carbon that is, in some ways, radically new, but is grounded in a government project of securing circulation that has been a project of the modern liberal state for some time. And within Costa Rica, it emerges from a history of accounting for the nation’s resources that has been unfolding since at least the 1980s. Once these resources began to be linked with trade and debt, they became defined in new ways: debt became ‘better management of nature’ and forests became calculable stocks of carbon. Now, with the country’s neutrality 2021 plan, such stocks are being linked to a government project of securing the circulation of the country’s carbon through its emergence as an economic object.

CONCLUSION

With its climate neutrality plan, the Costa Rican state is taking the element upon which all life on earth depends—carbon—and is situating itself as the regulator of its flows in the name of securing its territorial space as climatically neutral. Our analysis of the rise of PES in Costa Rica, and its central place in its carbon neutrality campaign, shows that this programme is much more than an act of climate policy but part of a long

running governmental trend toward providing environmental protection through a notion of security derived in market exchange. In this case, ‘carbon’ emerged as an object of governance through the nation’s efforts to secure its resources through their exposure to forms of circulation, a project that deployed practices of calculation that ultimately allowed for carbon to emerge as a territorialised object. In short, the rise of ‘carbon’ in Costa Rica was more than the diffusion of climate policy to this site, but was enabled by diffuse governmental logics that arose for often unconnected reasons.

This account advances thinking about the neoliberalisation of conservation in two ways. First, it provides new insights into how and why neoliberal conservation mechanisms arise. A great deal of scholarship on this trend has shown the ways in which new forms of conservation drawn along market-based lines of efficiency, privatisation, and commodification are being consolidated as a hegemonic policy mechanism, and being adopted worldwide (Büscher et al. 2014). This has been posited as a ‘new’ turn in conservation, one driven in part by the contradictions of capital, and the need to create new points of accumulation, and new natures to circulate for a profit in the form of offset and biodiversity credits (Castree 2008). Our account shows the ways in which these market techniques also articulate with these processes, where the logics of commodifying carbon emerge from governmental practices of promoting security and circulation with regard to many things—populations, debt, resources, and war. While the techniques of neoliberal conservation policies are undoubtedly new, and driven in part by a broader process of capital accumulation, our account of the rise of PES show how such techniques are also rooted in logics and practices of security, leverage, accounting, debt, and circulation that constitute the core concerns of modern liberal governance. In this way, these new techniques of conservation can be read as being grounded in longstanding practices of governmentality.

Second, this account demonstrates how, in the context of climate mitigation policies, mundane practices of calculation and measurement can work to reinforce, rather than erode, sovereign territorial power. Transnational actors, international agreements and well-defined global environmental problems play a significant role in shaping how and why carbon comes to be governed and territorialised. Nevertheless, by tracing localised shifts in three key areas—discourse about the value of forests, financialisation of forestry management, and the territorialisation of forest resources through geospatial technologies—we have shown how particular governmental techniques have allowed for these global processes to have force in the world. In short, what is less understood in the scholarly literature, and what we have brought to the forefront here, is an examination of how the capacity of carbon to become territorialised—for it to be thought of, and acted upon, in ways that render it as a part of the nation’s territory—is grounded in previously embedded logics of governance and practices of statecraft. In this way, concern for ‘the climate’ is a necessary, but not sufficient, condition for carbon’s territorialisation. What is also in play are diffuse logics and

practices of governance that allow carbon to become graspable as an economic and political object.

This is a critical point because it indicates that such neoliberal approaches toward the climate have a deeper history than most accounts acknowledge, and thus, are likely to have a durable future as well. Today, most evidence suggests that Costa Rica's plan for carbon neutrality will likely fail on its own terms, and the nation will be a net emitter of more carbon than ever by 2020 (Fletcher 2013). Its rise as a political project, however, has been a tremendous success. If we think of carbon neutrality not as a technical condition to be achieved, but as a political technology, we can more properly diagnose its effects: carbon now has territorialisable properties, and has become a governable object—in this case an economic object—within the sovereign authority of the Costa Rican nation-state through its attachment to forms of economic circulation. Even if this regime of carbon neutrality fails on its own terms, the multilayered origins of the logics of carbon offsetting in Costa Rica means that this mode of governing carbon through its commodification will not likely be displaced for some time.

NOTES

1. This plan for neutrality involves the state selling carbon offset rights to domestic carbon emitters. Since it began its PES programme in 1997 the state has acquired carbon sequestration rights from landowners, but have largely failed in their goal of selling them on international markets to carbon emitters (Lansing 2010). Now, the state agency (FOAFIFO) in charge of PES is selling offsets to domestic emitters such as airlines, car rental agencies, hotels, and tourist buses, but with hope of expanding this to businesses and consumers outside the tourism industry.
2. For more on the relation between state management of ecosystem service payments and the neoliberal goals of the policy in Costa Rica, see a series of three articles in Geoforum that are in conversation with each other on this topic: Fletcher and Breitling 2012; Lansing 2013; Matulis 2013.

REFERENCES

- Anderson, B. 2010. Preemption, precaution, preparedness: anticipatory action and future geographies. *Progress in Human Geography* 34(6): 777–798.
- Anderson, B. 2012. Affect and biopower: towards a politics of life. *Transactions of the Institute of British Geographers* 37(1): 28–43.
- Andonova, L., M. Betsill, and H. Bulkeley. 2009. Transnational climate governance. *Global Environmental Politics* 9(2): 52–73.
- Bailey, I. 2007. Neoliberalism, climate governance, and the scalar politics of EU emissions trading. *Area* 39(4): 431–442.
- Bailey, I. and S. Maresh. 2009. Scales and networks of neoliberal climate governance: the regulatory and territorial logics of European Union emissions trading. *Transactions of the Institute of British Geographers* 34(4): 445–461.
- Betsill, M. 2007. Regional governance of global climate change: the North American Commission for Environmental Cooperation. *Global Environmental Politics* 7(2): 11–27.
- Betsill, M. and H. Bulkeley. 2004. Transnational networks and global environmental governance: the cities for climate protection programme. *International Studies Quarterly* 48(2): 471–493.
- Boyd, W. 2010. Ways of seeing in environmental law: how deforestation became an object of climate governance. *Ecology Law Quarterly* 37: 843–916.
- Brockett, C.D. and R.R. Gottfried. 2002. State policies and the preservation of forest cover: lessons from contrasting public-policy regimes in Costa Rica. *Latin American Research Review* 37: 7–40.
- Bulkeley, H. 2001. Governing climate change: the politics of risk society? *Transactions of the Institute of British Geographers* 26(4): 430–447.
- Bulkeley, H. 2005. Reconfiguring environmental governance: towards a politics of scales and networks. *Political Geography* 24(8): 875–902.
- Bulkeley, H. and S. Moser. 2007. Responding to climate change: governance and social action beyond Kyoto. *Global Environmental Politics* 7(2): 1–11.
- Bulkeley, H. and P. Newell. 2010. *Governing climate change*. London: Routledge.
- Büscher, B., W. Dressler, and R. Fletcher (eds.). 2014. *Nature™ Inc.: Environmental conservation in the neoliberal age*. Tucson, AZ: University of Arizona Press.
- Callon, M. 2009. Civilizing markets: carbon trading between in vitro and in vivo experiments. *Accounting, Organizations and Society* 34(3): 535–548.
- Castree, N. 2005. Bioprospecting: from theory to practice (and back again). *Transactions of the Institute of British Geographers* 28(1): 35–55.
- Castree, N. 2008. Neoliberalising nature: the logics of deregulation and reregulation. *Environment and planning A* 40(1): 131–152.
- Cerdas, R. 1991. Costa Rica since 1930. In: *Central America since independence*. (ed. Bethel, L.). Cambridge: Cambridge University Press.
- Clark, M.A. 1997. Transnational alliances and development policy in Latin America: nontraditional export promotion in Costa Rica. *Latin American Research Review* 32: 71–97.
- Cody, B. 1988. Debt for nature swaps in developing countries: an overview of recent conservation efforts. *CRS Report for Congress* September 26, 1988. Congressional Reporting Service.
- Cox, K. 1998. Spaces of dependence, spaces of engagement and the politics of scale, or looking for local politics. *Political Geography* 17(1): 1–23.
- Deacon, R.T. and P. Murphy. 1997. The structure of an environmental transaction: the debt-for-nature swap. *Land Economics* 73: 1–24.
- de Camino, R., O. Segura, L. Guillermo Arias, and I. Perez. 2000. *Costa Rica forest strategy and the evolution of land use*. Washington, DC: The World Bank.
- Dempsey, J. and M. Robertson. 2012. Ecosystem services: tensions and developments within neoliberal environmentalism. *Progress in Human Geography* 36(6): 758–779.
- de Vos, H.J. 2003. *Picturing planning perspectives: understanding implementation of geographical informational systems for land use planning and regulation in the Costa Rican state*. Ph.D. thesis. Wageningen University, Netherlands.
- de Vos, H.J. 2007. Organisational culture: institutionalization of GIS for forest monitoring in Costa Rica. *Environment and Planning B: Planning and Design* 34(2): 355–368.
- Dillon, M. 2007. Governing terror: the state of emergency of biopolitical emergence. *International Political Sociology* 1(1): 7–28.
- Dobles, R. 2008. *Summary of the national climate change strategy*. Ministry of Environment and Energy, San José, Costa Rica.
- Edelman, M. 1999. *Peasants against globalization: rural social movements in Costa Rica*. Stanford, CA: Stanford University Press.
- Elden, S. 2005. Missing the point: globalization, deterritorialization and the space of the world. *Transactions of the Institute of British Geographers* 30(1): 8–19.
- Elden, S. 2010. Thinking territory historically. *Geopolitics* 15: 757–761.
- Elden, S. 2013. Secure the volume: vertical geopolitics and the depth of power. *Political Geography* 34: 35–51.
- Fletcher, R. 2010. Neoliberal environmentalism: towards a poststructuralist

- political ecology of the conservation debate. *Conservation and Society* 8(3): 171–181.
- Fletcher, R. and J. Breitling. 2012. Market mechanism or subsidy in disguise? Governing payment for environmental services in Costa Rica. *Geoforum* 43(3): 402–411.
- Fletcher, R. 2013. Making ‘peace with nature’: Costa Rica’s campaign for climate neutrality. In: *From laggards to leaders: climate change governance in the developing world* (eds. Roger, C., D. Held, and E. Nag) Pp. 155–173. London: Polity Press.
- Foucault, M. 1977. Nietzsche, genealogy, history. In: *The Essential Works of Foucault, vol 3: Power*. (ed. Faubion, J.D.) New York, NY: New Press.
- Foucault, M. 2003. *Society must be defended: lectures at the College de France, 1975–1976*. New York, NY: Picador.
- Foucault, M. 2007. *Security, territory, population: lectures at the College de France, 1977–1978*. New York, NY: Picador.
- Foucault, M. 2008. *The birth of biopolitics: lectures at the College de France, 1978–1979*. New York, NY: Picador.
- Fundecor. 1994. Proyecto CARFIX [CARFIX project proposal] Fundecor, PO Box 5581150, La Uruca, San José, Costa Rica. Copy available upon request at info@fundecor.or.cr.
- Gonzalez Chaverri, P., C. Porras Salazar, and L.A. Aguilar Salas. 1998. La compra de Madera por adelantado: una nueva vision aplicada por Fundecor San Jose, Costa Rica: Fundecor. <http://www.fundecortechnology.org/fundecor/Publicaciones/Publicaciones.html>. Accessed on September 5, 2011.
- Grove, K. 2010. Insuring ‘our common future’? Dangerous climate change and the biopolitics of environmental security. *Geopolitics* 15(3): 536–563.
- Grove, K. 2012. Preempting the next disaster: catastrophe insurance and the financialization of disaster management. *Security Dialogue* 43(2): 139–155.
- Gupta, A., E. Löwbrand, E. Turnhout, and M.J. Vilje. 2012. In pursuit of carbon accountability: the politics of REDD+ measuring, reporting and verification systems. *Current Opinion in Environmental Sustainability* 4(6): 726–731.
- Hannah, M. 2009. Calculable territory and the West German census boycott movements of the 1980s. *Political Geography* 28(1): 66–75.
- Honey, M. 1994. *Hostile acts: US policy in Costa Rica in the 1980s*. Gainesville, FL: University of Florida Press.
- Karkkainen, B. 2004. Post-sovereign environmental governance. *Global Environmental Politics* 4(1): 72–96.
- Krippner, G. 2005. The financialization of the American economy. *Socio-Economic Review* 3(2): 173–208.
- Lansing, D. 2010. Carbon’s calculatory spaces: the emergence of carbon offsets in Costa Rica. *Environment and Planning D* 28(4): 710–725.
- Lansing, D. 2012. Performing carbon’s materiality: the production of carbon offsets and the framing of exchange. *Environment and Planning A* 44(1): 204–220.
- Lansing, D. 2013. Understanding linkages between ecosystem service payments, forest plantations, and export agriculture. *Geoforum* 47: 103–112.
- LiPuma, E., and B. Lee. 2004. *Financial derivatives and the globalization of risk*. Durham, NC: Duke University Press.
- Lövbrand, E., and J. Strippel. 2006. The climate as political space: on the territorialisation of the global carbon cycle. *Review of International Studies* 32(02): 217–235.
- Lövbrand, E., and J. Strippel. 2012. Disrupting the public-private distinction: excavating the government of carbon markets post-Copenhagen. *Environment and Planning C* 30(4): 658–674.
- Lovejoy, T.E. 1984. Aid debtor nations’ ecology. *The New York Times*. October 4, 1984 (A31).
- Marois, T. 2005. From economic crisis to a ‘state’ of crisis?: the emergence of neoliberalism in Costa Rica. *Historical Materialism* 13(3): 101–134.
- Marshall, C. 2008. Costa Rica bids to go carbon neutral. *BBC* August 11, 2008. <http://news.bbc.co.uk/2/hi/americas/7508107.stm>. Accessed on April 23, 2013.
- Martin, R. 2002. *Financialization of daily life*. Philadelphia, PA: Temple University Press.
- Matulis, B.S. 2013. The narrowing gap between vision and execution: neoliberalization of PES in Costa Rica. *Geoforum* 44: 253–260.
- MacKenzie, D. 2009. Making things the same: gases, emission rights, and the politics of carbon markets. *Accounting, Organizations and Society* 34(3): 440–455.
- Mirowski, P. 2009. Defining neoliberalism. In: *The road from Mont Pelerin: the making of the neoliberal thought collective*. (eds. Mirowski, P. and D. Pielwe.) Pp. 417–450. Cambridge, MA: Harvard University Press.
- Mora, E. 1998. Proteccion de bosque, venta de fijacion de carbono y protagonismo del Mercado (con Franz Tattenbach) *Ciencias Ambientales* December 15, 1998.
- Navarro, G. and H. Thiel. 2007. *On the evolution of the Costa Rican forestry control system* Verifor country case study No. 6. Available at: <http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/4450.pdf>. Accessed on June 3, 2013.
- Obando, G. 1998. El uso de computadoras, programmeas e instrumentos electronicos en la planificacion del manejo del bosque humedo tropical en Costa Rica Fundecor, San José, Costa Rica. <http://www.fundecor.org/inf-tecnica/documentos>. Accessed on June 5, 2010.
- Occhiolini, M. 1990. *Debt-for-nature swaps*. Volume 393. Washington, DC: World Bank Publications. http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=478060&piPK=64165421&menuPK=64166093&entityID=000009265_3960929004833. Accessed on March 15, 2013.
- Oels, A. 2005. Rendering climate change governable: from biopower to advanced liberal government? *Journal of Environmental Policy & Planning* 7(3): 185–207.
- Okereke, C., H. Bulkeley, and H. Schroeder. 2009. Conceptualizing climate governance beyond the international regime. *Global Environmental Politics* 9(1): 58–78.
- Pagiola, S. 2006. Payments for environmental services in Costa Rica MPRA Paper No. 2010. <http://mpa.ub.uni-muenchen.de/2010/>. Accessed on May 1, 2009.
- Philo, C. 2007. Bellicose history and local discursivities: an archaeological reading of Michel Foucault’s *Society must be defended*. In: *Space, knowledge and power: Foucault and geography*. (eds. Crampton, J.W. and S. Elden). Pp. 341–368. London: Ashgate.
- Rice, J. 2010. Climate, carbon, and territory: greenhouse gas mitigation in Seattle, Washington. *Annals of the Association of American Geographers* 100(4): 929–937.
- Rojas, M. and B. Aylward. 2003. What are we learning from experiences with markets for environmental services in Costa Rica? a review and critique of the literature IIED Discussion Paper Environmental Economics Programme. [http://www.ecosystemeconomics.com/Resources_files/Rojas%20%26%Aylward%20\(2003\)%20CR%20Markets%20for%20Env%20Services.pdf](http://www.ecosystemeconomics.com/Resources_files/Rojas%20%26%Aylward%20(2003)%20CR%20Markets%20for%20Env%20Services.pdf). Accessed on July 15, 2013.
- Sader, S.A. and A.T. Joyce. 1988. Deforestation rates and trends in Costa Rica, 1940 to 1983 *Biotropica* 20: 11–19.
- Shallat, L. 1989. AID and the secret parallel state. In: *The Costa Rican reader* (eds. Edelman, M. and J. Kenan). New York, NY: Grove Press.
- Sojo, C. 1992. *La mano visible del Mercado: la asistencia de Estados Unidos al sector privado costarricense en la decada de los ochenta* ediciones. Managua, Nicaragua: CRIES.
- USAID. 1989. Costa Rica project paper: forest resources for a stable environment Project No. 515–0243. 222 pp. Washington, DC: United States International Development Cooperation Agency.
- Vandergeest, P. and N.L. Peluso. 1995. territorialisation and state power in Thailand. *Theory and Society* 24(3): 385–426.
- Vunderink, G.L. 1990. Peasant participation and mobilization during economic

- crisis: the case of Costa Rica. *Studies in Comparative International Development* 25(4): 4–34.
- Walker, R.B.J. 2009. *After the globe, before the world*. London: Routledge.
- Watson, V. and M. Ramirez. 1998. *Estudio de la cobertura forestal de Costa Rica utilizando imagines de satellite de 1986/87 y 1995/97* Centro Científico Tropical y Centro de Investigaciones en Desarrollo Sostenible (CIEDES), bajo el auspicio de Fondo Nacional de Financiamiento Forestal (FONAFIFO), San José, Costa Rica.
- While, A., A.E.G. Jonas, and D. Gibbs. 2010. From sustainable development to carbon control: eco-state restructuring and the politics of urban and regional development. *Transactions of the Institute of British Geographers* 35(1): 76–93.
- World Bank. 1993. *Costa Rica: forest sector review*. Agricultural Operations Division Report 11516 CR. Washington, DC: The World Bank.
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