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The Global Political Ecology of the Clean Development Mechanism

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This article seeks to explain the ways in which the "global" environmental governance of clean development intersects with the "local" politics of resource regimes that are enrolled in carbon markets through the production and trade in Certified Emissions Reductions (CERs). It shows how political structures and decision-making procedures, which were set up at the international level to govern the acquisition of CERs through the Kyoto Protocol's Clean Development Mechanism (CDM), interact with and transform national and local level political ecologies in host countries where very different governance structures, political networks, and state-market relations operate. It draws on literature within political ecology to understand how the creation of global carbon markets potentially disrupts and changes local social and ecological relations through impacts on property rights, access to resources, and notions of value and justice that exist in a diversity of sectors and settings that the CDM touches through its global reach. Drawing on field work in Argentina and Honduras, we illustrate the politics of translation[1] that occur when the social and environmental consequences of decisions made within global governance mechanisms such as the CDM are followed through to particular sites in the global political economy and, at the same time, how social relations and environmental conditions in those sites affect the global politics of the CDM.

The article combines an attempt to simultaneously map out empirical connections and develop theoretical tools for making sense of the political ecologies of the CDM within the context of global environmental politics. We argue that political ecology offers a rich set of resources for such an enquiry because of its focus on the embeddedness of environmental conflicts within broader social relations, which simultaneously influence the effectiveness of global climate governance and, in turn, are affected by the global regime.

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1. Newell 2008a.

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Global Environmental Governance and Political Ecology

What does a landfill site on the outskirts of Buenos Aires, Argentina, or a hydroelectric project in rural Honduras have to do with global environmental governance (GEG)? The answer to this question lies in carbon markets, which fund and oversee greenhouse gas emissions reduction projects and trade the credits they generate through the CDM. People, resources, and the ecologies of which they are a part are now being enrolled more directly into structures and processes of GEG in ways that generate methodological and theoretical challenges for conventional forms of enquiry in the field of global environmental politics (GEP).

Methodologically, there is the challenge of tracking and tracing the institutions, actors, and networks that connect "global" environmental politics to particular "local" outcomes. These involve a plurality of actors and intermediaries operating across numerous sites and scales, which implies understanding the roles of a range of nonstate actors that are not traditionally considered in the study of GEG: lawyers, project developers, verification agencies, and other market brokers. It also demands field work in sites that scholars of GEG rarely venture into, including landfill sites on the edge of cities in the global South, remote hydroelectric plants, and other areas far removed from decision-making in national and international arenas. Considering this plurality of actors and intermediaries constitutes unfamiliar territory for many scholars of global politics, yet understanding the reach of global carbon markets requires it.

The process of enrolling actors and their resources into global markets does not necessarily occur in a passive or reluctant way; some entrepreneurs position themselves to profit from carbon trading, while others may resist this process. The point is that connections between global decision-making processes and local livelihoods, and the value attached to them, are subject to change through the operations and modalities of global carbon markets. The ease with which diverse ecologies and social systems can be subjected to the modes of governance required to standardize and commodify carbon and trade emissions reductions in the global climate regime affects the nature of global political responses to climate change. How do these new connections operate in practice, what are their consequences, and how do we make sense of these relationships theoretically?

While many scholars of GEG have focused on the global politics of carbon markets through the CDM or emissions trading,[2] few have sought to trace politically what happens when decisions are made to construct markets, approve projects, and commodify carbon. There is a rich strand of activist literature, which seeks to expose the "climate fraud" and "climate colonialism" associated with carbon markets.[3] We lack, however, a nuanced empirical *and* theoretical understanding of the sorts of political relationships that operate across scales in car-

2. Bailey 2007; Boyd 2009; Paulsson 2009; Skjaerseth and Wettestad 2008; and Streck 2007.
3. Bachram 2004; Böhm and Dabhi 2009; and Lohmann 2006.

bon markets and their consequences for understanding global environmental politics and for the livelihoods of the world's poor. We suggest work within political ecology might usefully complement literature on the political economy of GEG in providing such an understanding.

Specifically, political ecology enables an understanding of (1) the "local" social and environmental consequences of global (environmental) governance—the ideologies, discourses, structures, and interests that it embodies, reflects, and projects; and (2) the ways in which "regimes" that govern resources at different levels engage and transform one another through global circuits of capital, production, and consumption. Because issues of access, property rights, and livelihoods are affected by and enrolled in global circuits of capital, we suggest that the political ecology literature provides a useful way of understanding the consequences of neoliberal forms of environmental governance. This contributes to analysis of who wins and who loses from particular global environmental governance arrangements in general,[4] and the CDM in particular.[5] It also engages literatures within geography concerned with how issues move across scales and the networked nature of environmental policy.[6]

Insights from political ecology connect well with political economy approaches to the study of environmental governance that explicitly locate sites of environmental decision-making within broader structures of economic and political power and the "routine and mundane" practices of capitalism as a way of understanding the relationship between global social and economic relations and environmental change.[7] Yet, with some exceptions, there is a notable and regrettable neglect of literatures on political ecology within the study of GEP.[8] We suggest that such literatures provide a series of useful insights that merit further engagement and refinement. We argue that the globalizing reach of international regimes and their role in creating markets in, and determining access to, resources as crucial as water, energy, and seeds means that critical accounts of GEG have to widen their analysis beyond the "international" level and conventional theoretical foci to comprehend how the structures of power that shape and circumscribe "global" environmental governance may also configure "local" sites of resource governance. In turn, we also contend that these local sites reconfigure global regimes through (1) the production (or not) of value, (2) struggles over symbolic meaning (whether projects can successfully be showcased as examples of the benefits of carbon markets, or highlighted for their potential to dispossess the poor), and (3) acts of resistance from social groups or "uncooperative" nature that prove difficult to commodify.

We note the need, therefore, to build on those strands of political ecology

4. Newell 2008b; Bäckstrand 2006; and Pattberg 2005.
5. Bumpus and Liverman 2008; Fuhr and Lederer 2009; Newell, Jenner, and Baker 2009; and Streck 2007.
6. Bulkeley 2005.
7. Newell 2008b; Paterson 2001; and Saurin 1996.
8. Adger et al. 2001.

which explore the "global" political and spatial dimensions of struggles and thereby escape the "local trap" that befalls some work in the political ecology tradition.[9] We argue that political ecology accounts of how local conflicts are embodied in broader structures of social and political power, including global environmental regimes and the interests and structures they reflect and consolidate, are best placed to make a contribution to this line of enquiry. It is through exploring the nature of the relationship between macro- and site-specific dynamics that interesting theoretical and practical insights might be derived.

The carbon economy offers a paradigmatic case for exploring empirically and theoretically the connections between global and local political ecologies, markets, and structures of governance. It offers a highly advanced instance of marketized environmental policy and the sorts of multi-scalar politics which political ecology approaches usefully capture. Political networks enroll a diversity of actors in practices of commodification, verification, and legitimation, processes central to the functioning of carbon markets. But they also create a politics of resistance to further commodification of the atmosphere, which itself shapes markets.[10] We draw on two case studies of CDM projects in Argentina and Honduras to illustrate the ways in which work on political ecology contributes towards understanding the global-local relationships they embody. The cases—urban waste in Argentina and rural hydroelectricity in Honduras—are chosen to reveal the different social and ecological dynamics at play in the production of offsets in distinct sectors and around urban-rural poverty dynamics in the two countries. They are situated in a region that has a common history of social mobilization around natural resources but has, thus far, with the exception of Brazil, not been a leading host of CDM projects.

Political Ecology

At its broadest, political ecology seeks to provide a framework for understanding human-environment relations.[11] More specifically, it examines the interrelations of politics and power, structures, and discourses with the environment.[12] Here, our interest is primarily identifying and engaging with those elements, which offer a bridge to international political economy (IPE) and critical traditions within GEP; that is, the more materialist political ecologies that posit linkages between ecologies and the economies of which they are a part.[13] In so doing we do not exclude the possibility that other strands of political ecology thinking might be used in similar and equally productive ways. In addition to political ecology work that examines the practices of commodification of so-

9. Brown and Purcell 2005.
10. Paterson 2009.
11. Paulson, Gezon, and Watts 2003; and Robbins 2004.
12. Bryant and Bailey 1997; Peet and Watts 2004; Robbins 2004; and Stott and Sullivan 2000.
13. Blaikie and Brookfield 1987; and Swyngedouw and Heynen 2004.

called neoliberal natures,[14] we also draw on more classic political ecology concerns around issues of access to material and natural resources, and questions of equity and justice issues in the negotiation and distribution of social and environmental benefits at multiple scales.[15]

Our aim then is to enhance existing strands of work on global political ecology, and to apply their insights to the case of the CDM. This includes the strand of political ecology thinking which developed in the wake of, and by way of response to, the Rio Earth Summit in 1992 associated with the work of Wolfgang Sachs, Nicolas Hildyard, Vandana Shiva and others. In the words of Wolfgang Sachs, this work critiques the "discourse of global ecology that has developed that is largely devoid of any consideration of power relations, cultural authenticity and moral choice" and which "promotes the aspirations of a rising ecocracy to manage nature and regulate people worldwide."[16] More recently it would include research which uses political ecology to examine global environmental discourses[17] or work that "emphasizes global political economy as a main causal theme."[18] Studies of the World Bank (WB), the Global Environment Facility (GEF),[19] and other initiatives aimed at marketizing environmental services[20] help to illuminate the same sorts of logics, institutions, and dynamics that characterize efforts to roll out the CDM as a legitimate response to climate change.

Given that site- and resource-specific conflicts increasingly result from and are embedded with global configurations of politics and social forces, we suggest how strands of critical IPE, which help to explain the constitution of carbon markets and the governance arrangements set up to support them,[21] might usefully connect with local political ecologies, which show how broader structures of power are present and reproduced in struggles around natural resources.[22] Political ecology's focus on material, institutional, and discursive practices complements in many ways neo-Gramscian framings of power in GEP, which explore expressions of power through governance arrangements that seek to globalize particular sets of material and political interests.[23] As with all hegemonic projects, carbon markets require strategies of accommodation to bring on board critics and make concessions in the name of preserving the power of an historic bloc and to maintain their status as "common sense" solutions to the problem of climate change. Hegemony is never complete, however, and acts of resistance to carbon markets serve to remake them,[24] producing legitimacy crises that their

14. Bakker 2005; Castree 2008; and Mansfield 2007.
15. Bryant and Bailey 1997; Peluso 1992; and Zimmerer and Bassett 2003.
16. Sachs 1993, xv.
17. Adger et al. 2001.
18. Peet, Robbins, and Watts 2011, 23.
19. Goldman 2005; and Young 2002.
20. Adams and Hutton 2007; Brockington and Igoe 2006; and McAfee 1999.
21. Newell and Paterson 2009.
22. Blaikie 1985; Blaikie and Brookfield 1987; and Peet and Watts 2004.
23. Levy and Newell 2002.
24. Paterson 2009.

advocates then have to address. Exposés of projects that do meet CDM additionality requirements, for example, produce efforts to create new procedures and standards to safeguard the credibility of the market as a whole.[25] Work within political ecology is also attuned to the ways in which globalizing projects are resisted and rejected, or reworked into more positive local impacts. These highlight, for example, how people create opportunities within the global carbon economy by "maneuvering through and finding spaces at the interstices of the same political economy that in other ways simultaneously constrains and structures their agency."[26]

Governing the Clean Development Mechanism

The CDM is a project-based offset mechanism whereby developed country investors can reduce their greenhouse gas compliance obligations under the Kyoto Protocol by reducing emissions below a business as usual baseline in developing countries. Central to this system is the concept of additionality, which refers to the need for the project to prove it is above and beyond business as usual scenarios for emissions reductions. It relies, therefore, on a counterfactual assessment of regulatory, technological, and financial barriers to the uptake of low-carbon (and carbon equivalent) opportunities.

The main driver for the CDM is the regulatory framework of the Kyoto Protocol and the European Union Emissions Trading Scheme, which accepts CDM credits as a part of its compliance efforts. The CDM is accountable to the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol and is regulated by the CDM Executive Board. Its daily governance, however, is enacted by a plethora of business, government, community, and individual actors that span the globe. These include national-level designated national authorities (DNAs) that have to approve projects, project developers such as the firm Eco-securities, and designated operational entities (DOEs)—firms such as DNV, Tüv Sud, and SGS that are charged with validating project design documents for approval by governments, and the CDM Executive Board. A different DOE from that which validated the project then also verifies the emissions reductions that have been paid for. In addition to emissions reductions, the CDM is mandated to contribute to sustainable development, as defined by host countries. In practice it does this in a highly uneven way in terms of the distribution of projects across sectors and regions; just two countries, India and China, capture over 65 percent of the registered projects, while African countries were home to less than 2 percent of CDM projects in 2011.[27]

The CDM grew rapidly from virtually nothing in the early 2000s to pro-

25. Newell and Paterson 2010.
26. Bebbington 2003, 300.
27. UNFCCC 2011.

ducing credits with a value of US$6.5 billion in 2008[28] and represents a significant attempt to roll out a market on a global scale. We see in the creation of carbon markets many of the dynamics of capitalism in general at work.[29] One of the means by which carbon is made to count and, therefore, which enables it to circulate in commodity form, is through elaborate systems of accounting, benchmarking, and measurement. An intricate politics is implied by attempts to commodify carbon (and other greenhouse gases). Carbon has to be rendered manageable, containable and quantifiable, fungible in value, and commensurate to be tradable as a commodity.[30] What appear as mere technical exercises in measuring, accounting, and verifying emissions are deeply political because of the financial value they can generate, the politics of what gets measured and what does not, the judgments that are made about where to invest, and what sustainable development benefits are expected to flow from particular projects.[31]

Project developers and verifiers, operating in many different countries, import and export standards, norms, and lessons from one project to the next. Yet, at the same time, they encounter a specific set of issues, actors, and distinct political ecologies that differ hugely by setting, which they have to negotiate and manage. They also have to navigate varieties of clean development governance, whereby national governments employ different criteria of sustainable development and where uneven state capacity to process applications for projects and monitor their implementation is apparent.[32]

More controversial, however, is the claim that carbon markets reproduce the tendency in neoliberalism to capitalize upon existing inequalities, and in so doing further entrench them, as new patterns of accumulation are enabled in the name of climate policy.[33] Others, however, have shown how carbon finance can help scale up local economies with potentially beneficial outcomes.[34] CDM projects can, therefore, be both locally empowering and disempowering depending on the specific political, economic, social, and ecological contexts in which projects are implemented.

This suggests that we need to understand negotiations around socioeconomic and ecological value and how the distribution of benefits is fought over. The question of what does and does not count as clean development is, therefore, not just an issue for international institutions. Carbon finance and CDM projects are received and understood in relation to preexisting socioeconomic, environmental and political priorities, relations and institutions around forests,

28. Kossoy and Ambrosi 2010.
29. Newell and Paterson 2009; and Newell and Paterson 2010.
30. Bumpus 2011; Castree 2003; and Prudham 2009.
31. Callon 2009; Lohmann 2009; and MacKenzie 2009.
32. Newell 2009.
33. Bond, Dada, and Erion 2009; and Lohmann 2006.
34. Simon, Bumpus, and Mann, 2012.

energy, and waste which, if they are to be effective, they have to engage and transform. It is to these that we now turn.

The following section provides insights into the political ecology of two distinct sites in the global political economy of the CDM: Argentina and Honduras. We use these cases to highlight the benefits to be gained from using political ecology to understand the global environmental politics of carbon offsets. The analysis is based on fieldwork in Argentina and Honduras involving multiple interviews, document analysis, and direct observation. Rather than making claims about their generalizability to the wider population of CDM projects, we aim to show how the apparently local socioeconomic and environmental politics they describe interact with the global politics of the CDM and how this can usefully be understood by drawing on relevant themes from political ecology.

Clean Development in Argentina: The Political Ecology of Rubbish

Argentina is a country with extensive potential to reduce emissions and move towards lower carbon development, much of which is unrealized because of a complex mix of structural and technical barriers, weak systems of governance, and low levels of political will to propose reforms or capitalize on opportunities to access carbon finance. Those CDM projects that do exist are grounded in particular political ecologies, which we explore here through a case study of a landfill gas project to capture and flare methane.[35]

Global Translations

The carbon economy has been embedded politically and institutionally in Argentina in a number of ways. In part, CDM governance in Argentina was driven by external factors, such as the climate change negotiations. In 1998 a team of specialists from inside and outside the government was brought together in the run-up to COP4 (Conference of the Parties) to manage carbon projects including Fabián Gioli, who went on to head the country's DNA. The *Oficina de Implementacíon Conjunta (OAIJ)* was set up to manage the AIJ (Activities Implemented Jointly) projects, driven largely by the US, that prepared the ground for subsequent CDM projects by ensuring procedures were in place for receiving and handling carbon-financed projects.[36] The country's DNA was then set up in 2002 in the wake of the Marrakesh accords, which provided the rules and procedures for the operation of the CDM. As a compliment to the Designated National Authority, the *Fondo Argentino de Carbono* (FAC)[37] was then set up in 2005,

35. This case study is part of a broader research project in Argentina for which 43 interviews have been undertaken to date with government officials from a range of departments, project developers, DOEs, financiers and NGOs.
36. Author's interview with project developer and former member of the DNA, Buenos Aires, April 2009.
37. Argentine Carbon Fund.

with World Bank Carbon Finance Assist money, to promote CDM projects, although it had no funds to create them.

Landfill gas projects make up the largest number of CDM projects in Argentina, and the World Bank and bilateral donors have promoted them as one of the most lucrative opportunities for attracting CDM finance. Yet the waste sector connects the international negotiations on climate change to the politics of poverty in Argentina. Attempts by Northern countries to secure maximum flexibility in their emissions reductions by securing opportunities for buying credits from the global South serve, in this instance, to intensify localized conflicts over who owns the waste and who lives with its side effects. This is because landfill gas projects in Argentina are at the center of a series of controversies around the political ecology of waste and rubbish, in Buenos Aires in particular. Following the economic crisis of 2001–2002 in Argentina, many people lost jobs and savings, and fell below the poverty line. As a result, a scavenger economy of informal waste collectors and recyclers grew to a scale not seen before. This informal sector has created conflicts between the city mayor and prominent businessman Mauricio Macri, who has his own interests in waste companies and these so-called *cartoneros* who collect and sell cardboard.[38]

Local Negotiation and Contestation

The CDM enters this landscape through *Coordinación Ecológica Area Metropolitana Sociedad del Estado* (CEAMSE), the municipal agency responsible for handling the city's waste. It is party to several of the CDM projects set up to capture and flare methane. Many of the sites are out of the city where "villas" (slums) have grown up alongside them. One such site is Ensenada in La Plata, a 10-year gas-flaring project on a landfill site where CEAMSE claims up to 20 percent of the 2,580,100 CERs expected to be generated by the project.[39] The burning of waste, the smell of methane emitted from the waste, and the noise and pollution caused by the constant transport of waste to and from these sites has led to claims of ill health and even fatalities by people living alongside the site. Conflicts between CEAMSE and the surrounding community are apparent as you approach the Ensenada site and you are greeted with signs that accuse CEAMSE of being *asesinos* (killers), or just state *"No a CEAMSE."*

When discussing opposition to the site in general and to the gas project in particular, CEAMSE officials claim the "social demands" articulated by the communities and the judicial proceedings instigated to close the site were not local, but the result of outside agitators.[40] This is despite project developers, the Canadian firm Conestoga-Rovers & Associates, conceding that a lot of disquiet and skepticism about the project was expressed in community meetings. In terms of

38. Newell 2010.
39. Author's interview with project manager at Ensenada site, La Plata, Buenos Aires, April 2009.
40. Author's interview with CEAMSE official, Buenos Aires, December 2007.

CDM approval, projects are meant to engage in consultations with stakeholders and groups that may be affected by the project. The managers of one project were honest enough to admit that, as far as they were concerned, local consultations were largely a "check-list" process. Meetings were held and social benefits of the projects are claimed, but, according to the project developers, the "social side drops off" since it is not evaluated or valued in terms of the receipt of CERs. The CDM Executive Board and buyers of CERs want "data and quantity" and nothing more, they claim.[41]

CEAMSE gets a percentage of the sale of the CERs and so, depending on CER price, is a clear beneficiary of this new stream of revenue through carbon markets. The project developers claim they provide a clear case of additionality, since without this investment there would be no incentives to reduce gas emissions. Benefits are said to include local employment for people in the surrounding area, better than average wages, and less odor from the site as the methane is burned off rather than released into the atmosphere.[42]

The issue from the point of view of the political ecology of clean development is that, just as critics of carbon trading claim has happened elsewhere,[43] CDM finance is alleged to have provided an extra incentive and a financial lifeline to keep open a plant that many people claim is toxic and damaging their health. Isolating the extent to which CDM finance, by prolonging the life of the plant, causes or exacerbates these problems is a difficult and contentious exercise since the landfill site has been in operation since 1982 and the communities which surround it experience a range of deprivations that entrench poor health and low levels of environmental quality. We can, nevertheless, see clear resonances here with the environmental justice concerns in political ecology literature that polluting activities, left to the market, tend to be located in areas inhabited by poorer people, who have less power to resist and where land is cheaper.[44]

Resource Materialities

Many studies in political ecology place emphasis on the way in which the materiality of a resource affects its governability and the nature of politics around it, emphasizing the "uncooperative" nature of some resources and the way in which nature itself has agency in shaping political economic outcomes.[45] We see these dynamics at work in this case. The nature and value of methane production is political because areas holding the newest waste emit the most methane,

41. Author's interview with project developer responsible for the Ensenada site, Buenos Aires, April 2009.
42. Conestoga-Rovers & Associates 2006.
43. Lohmann 2006.
44. Newell 2005.
45. Bumpus 2011.

which can be captured more easily and at lower cost.[46] Firms invest vast amounts of time and resources into constantly trying to control the balance and interaction of gases to maximize profits, adjusting pipes that carry methane, CO_2 and oxygen to maximize flows of the former. "Uncooperative" methane often outmaneuvers such attempts at isolation and containment. Its composition, dispersal, and presence is constantly monitored, and taps and pipes must to be checked and moved to capture (and ultimately flare) as much as possible. The elaborate rituals of monitoring and data collection tie these attempted acts of control directly to assessments and apportionments of value through CERs back in Bonn at the CDM Executive Board.

Indeed, these local material difficulties are intimately tied to the global environmental politics of climate negotiations. At the project site, there is intense pressure to flare gas continuously, to extract maximum value in the shortest time frame possible. This pressure is intensified by the drive to issue CERs before 2012, the end of Kyoto's first commitment period, since a second period has yet to be agreed. It can take one year between final approval of all claimed savings and the release of all CERs; hence global climate governance enters the equation again. International verifiers come to the site to check readings, which are also sent every two minutes to Land Tec in the United States, where data on the mix of gases and speed of transfer is stored. Elaborate systems of recording, maintenance, and security (to help prevent theft from the site) are put in place to ensure that CER revenues are generated as smoothly as possible from the site.

This short case study shows how the CDM and the actors and networks that underpin it become embroiled in the political ecology of waste and localized struggles over access, value, and property that shape the functioning of the carbon market. The local political ecology of waste influences the extent to which surplus value can be generated and capital accumulated, as well the credibility and legitimacy of claims about the ability of projects to create social benefits for poorer groups. But it is clear from the brief discussion here that we should be cautious not to underestimate the agency and resilience of existing political networks of actors and interests that are able to resist or coopt attempts to govern resources in new ways. Such conceptions are a key tenet of political ecology and are important in understanding the extent to which, and ways in which, global carbon finance mechanisms get reworked in local contexts.

Clean Development in Honduras: The Political Ecology of Energy

Honduras is the second-largest country in Central America, but in 2007 it ranked third-lowest on the human development index among Central American countries, after Guatemala and Haiti.[47] High levels of poverty, export-led growth, and

46. Author's interviews with project managers, Ensenada site, and CEAMSE officials, Buenos Aires, December 2007.
47. UNDP 2007.

large renewable energy potential made Honduras an ideal target for carbon finance. Honduras was involved early in the CDM, hosting the first registered CDM project,[48] and creating streamlined governmental processes for CDM approvals as early as 2005.[49] Despite this early engagement, in 2010 Honduras hosted only 4 percent of Latin America's CDM projects, and, as of 2010, was set to only produce 1 percent of CER volume from Latin America by 2012, from a total of 29 projects (of which 9 are methane avoidance, 8 biomass energy, and 11 hydroelectric).[50] Low continuity in government administration has led to a patchy policy framework, which has contributed to impeding effective implementation.

Sustainable development priorities for CDM projects in Honduras are not specific to carbon finance, and instead are defined by broader national government priorities for development. Although environmental impact assessments have to be made under Honduran law, national policies do not provide specific details on benefits for local communities, especially the rural and urban poor. As a local project developer noted, the law states that "you have to provide social benefits . . . [but] some local and some foreign companies do and some don't. The government doesn't check up on it."[51] These loosely defined "social projects" to benefit communities, although mandated by law, are not specified, nor verified under standard CDM projects.

Like the case in Argentina, the project is negotiated at multiple levels. In the case of the CDM hydroelectric project analyzed here, the distribution of socio-political power and its use in the negotiation of development associated with the implementation of the project occurred at three principal levels: through the World Bank's connection to the project via carbon finance; the unequal distribution of local assets valuable to the project developers; and the unequal distribution of capacity among local communities to organize and negotiate access to benefits.

Global Translations

The international climate regime shapes local material development through the actions of project developers, verifiers, and consultants working under the incentives of the CDM, largely bypassing the nation state, except for signing-off on the letter of approval under the CDM. Clean development projects that are promoted internationally as supporting community development may rely on local company operations, corporate social responsibility (CSR) activities, or specific carbon offset co-benefits to create development benefits. The case study of a small-scale Honduran CDM hydroelectric project[52] shows how local politics

48. UNFCCC 2005.
49. Lokey 2009.
50. UNEP-Risöe 2010.
51. Author's interview with local business manager for CDM project developer, December 2006.
52. Case study analysis here draws on 80 in-depth interviews with members of three local communities, World Bank and Honduran government staff, project developers, verifiers and consultants.

mix with the broader carbon economy and the global politics of the CDM, how global politics are instilled in local actions, and how, through retelling local development stories, the local politics of clean development affect the global.

CDM projects embody multiple aspirations for different attributes at different scales, including carbon credit generation, revenue generation, and specific local development considerations. For example, the Emissions Reduction Purchase Agreement for the micro-hydroelectric project in Honduras noted that the project was to reforest the local watershed, provide employment and training activities for local workers, and electrify local communities. Contrary to some other small-scale community development-driven carbon offsets,[53] however, local communities were not paid directly for their role in generating carbon credits in the project, although they were important in providing the ecosystem services (such as watershed protection) and operational services (such as a cheap labor force) that the facility requires to run effectively.

Local Negotiation and Contestation

The engagement of international institutions such as the World Bank (WB) in the new carbon economy and their promotion of these mechanisms in developing countries provide a conduit to understand the stark differences between local, national and international understandings of what constitutes clean development. Although national politics encouraged incoming finance for the CDM in Honduras, a lack of local awareness of the importance of the specific project in promoting the role of global offset markets meant that local governments did not use the project's position as a carbon offset to negotiate improved benefits.

Initially, communities were not actively engaged or informed that the project officially existed as part of the CDM; community engagement was for operational reasons only. The WB Carbon Finance Unit stipulated minimum requirements for local development, but these did not go beyond business as usual activities for the CDM project developer.[54] Given the market orientation of the CDM, as we saw in the Argentinean case, carbon must come first.[55] WB governance of the project meant that development assistance for local communities was contingent on the willingness of communities to assist the project in order to facilitate the effective running of the hydroelectric dam, and, therefore, its generation of CERs for the WB and its clients.

For this reason, local contestation directly influenced global politics. Despite the project developer's involvement in community development, beyond that stipulated by the WB, some conflict in negotiations between the developer, municipality and local indigenous associations led the WB to intervene because of the project's high profile position as an early CDM project. As a result, WB

53. Corbera 2005.
54. Author's interview with former community leader, November 2008; author's interview with managing director of CDM project, November, 2006.
55. Olsen 2007; and Bumpus and Cole 2010.

employees visited, held a meeting, and mandated an increase in monitoring of the management of the project. An increase of US$1 per ton CO_2 emissions sold was negotiated to help pay for improved local monitoring, and to assist in the communication between the project developers and local organizations, helping to mitigate the project's position as a potential liability to the WB's portfolio of successful development-oriented carbon offsets.[56] The intervention illustrates how local politics and negotiations between the private and public sector and local indigenous communities became globally significant because of the symbolic and material value attached to the project in the WB's emerging portfolio of carbon funds, which aimed to demonstrate the effectiveness of carbon markets as a response to climate change. The agency of local actors in resisting and reworking incoming flows of finance associated with the global environmental regime became key determinants of the material outcomes of the project both locally and internationally.

Resource Materialities

In the context of the CDM, there are also (bio)physical dimensions which underpin the political ecology of clean development. Capital projects take place in specific locations according to certain advantageous characteristics for the extraction of profit from natural or human resources.[57] The relationship between the material success of the hydroelectric dam, the physical geography of local communities, and the ability of local communities to assist in the success of the facility affected the capacity of some communities to benefit over others. Communities situated next to project facilities that provided workers for the construction of the hydroelectric plant and situated close to the main electricity line benefited the most. Other communities, however, had to rely on a combination of organization and negotiation because of their relative geographic position. For example, reforestation was essential to the project success because of limited water containment and the need for steady supply from the watershed; communities that organized and leveraged their valuable watersheds had the power to bargain and negotiate more development benefits from the project developer, such as electrification. As a result, some communities were better able than others to reconcile incoming clean development finance with local livelihood and development needs. Local sociopolitical and material factors have direct and important implications for the real workings of CDM projects, just as more successful case studies are mobilized to support claims in global arenas to promote carbon finance as a means of delivering clean development. Analysis of the CDM must, therefore, account for these highly localized political negotiations as part and parcel of the daily enacting of global environmental governance.

56. Author's interview with managing director of CDM project, December 2006.
57. Bakker and Bridge 2006.

Conclusion

A political ecology approach highlights the need to understand how local contexts are influenced and become part of global processes, but also how local agency and context influence wider structures. Capturing the interplay between dynamic social and ecological relations across scales adds an important dimension to discussions on GEG given the increasingly multi-scalar nature of climate change governance.[58]

We have seen how regimes of governance and resource control, with their own networks of actors, conflicts of interests, and programs of regulation, shape, and are shaped by the "global" governance of the CDM. Political ecology accounts provide a nuanced sense of how power and value flow through these networks of decision-making and how and why global priorities and intentions, once refracted through national and subnational political processes, look very different on the ground. In particular we have been able to show that projects governed by similar processes within the UN climate regime, and involving similar ensembles of project developers, financiers, and verifiers, manifest very different outcomes because of the distinct social processes and diverse ecologies they encounter and with which they have to negotiate in order to be able to extract value.

We suggest that these cases affect, and are a consequence of, the conduct of global politics. This interaction occurs as market entrepreneurs move across scales and participate in consultations with the CDM Executive Board, representing the local globally and vice versa, or in the way in which local political ecologies affect the scope of other countries to reduce their own emissions though offsets. These interactions also occur indirectly in the way specific projects come to be represented as successes, for example by showcasing what carbon markets can do for the poor, or as cases of the social and environmental damage that can be done by extending the logics of commodification. As value is increasingly placed on local conditions in specialized markets for "high development" or "social" carbon, their fetishization intensifies both opportunities to gain from the carbon economy, while also heightening the prospect of conflict over access to resources.

Although carbon markets and the CDM perhaps represent an emblematic case of the connections we identify as important and in need of explanation, because they explicitly tie emissions reductions obligations on the part of the North to concrete actions in the global South, it is no doubt the case that other areas of (global) environmental governance might also be appropriately studied in this way. The regime on biosafety and biodiversity and on the use of persistent organic compounds each impact on the patterns of exchange and use value in the global economy, which touch, directly and indirectly, the lives of many millions of people not considered formally part of the regime. This pattern

58. Bulkeley and Newell 2010.

reaffirms the importance of thinking about what counts as global as a *causal* rather than primarily or exclusively as a *spatial* category,[59] and suggests that, viewed this way, the tools and approaches we have drawn attention to here might be of use to scholars working on other issue areas or in other parts of the world.

References

Adams, William, and Jon Hutton. 2007. People, Parks and Poverty: Political Ecology and Biodiversity Conservation. *Conservation and Society* 5 (2): 147–183

Adger, Neil W., Tor A. Benjaminsen, Katrina Brown, and Hanne Svarstad. 2001. Advancing a Political Ecology of Global Environmental Discourses. *Development and Change* 32 (4): 681–715.

Bachram, Heidi. 2004. Climate Fraud and Carbon Colonialism: The New Trade in Greenhouse Gases. *Capitalism, Nature, Socialism* 15 (4): 1–16.

Bäckstrand, Karin. 2006. Democratizing Global Environmental Governance? Stakeholder Democracy After the World Summit on Sustainable Development. *European Journal of International Relations* 12 (4): 467–498.

Bailey, Ian. 2007. Neoliberalism, Climate Governance and the Scalar Politics of EU Emissions Trading. *Area* 39 (4): 431–442.

Bakker, Karen. 2005. Neoliberalizing Nature? Market Environmentalism in Water Supply in England and Wales. *Annals of the Association of American Geographers* 95 (3): 542–565.

Bakker, Karen, and Gavin Bridge. 2006. Material Worlds? Resource Geographies and the "Matter of Nature." *Progress in Human Geography* 30 (1): 5–27.

Bebbington, Anthony. 2003. Global Networks and Local Developments: Agendas for Development Geography. *Tijdschrift Voor Economische En Sociale Geografie* 94 (3): 297–309.

Blaikie, Piers. 1985. *The Political Economy of Soil Erosion in Developing Countries.* London: Longman.

Blaikie, Piers, and Harald Brookfield. 1987. *Land Degradation and Society.* London: Methuen.

Böhm, Steffen, and Siddhartha Dabhi, eds. 2009. *Upsetting the Offset: The Political Economy of Carbon Markets.* London: MayFly Books.

Bond, Patrick, Rehana Dada, and Graham Erion, eds. 2009. *Climate Change, Carbon Trading and Civil Society: Negative Returns on South African Investments.* Scottsville: University of Kwazulu Natal Press.

Boyd, Emily. 2009. Governing the Clean Development Mechanism: Global Rhetoric Versus Local Realities in Carbon Sequestration Projects. *Environment and Planning A* 41 (10): 2380–2395.

Brockington, Daniel, and James Igoe. 2006. Eviction for Conservation: a Global Overview. *Conservation and Society* 4 (3): 424–470.

Brown, J. Christopher, and Mark Purcell. 2005. There's Nothing Inherent About Scale: Political Ecology, the Local Trap and the Politics of Development in the Brazilian Amazon. *Geoforum* 36 (5): 607–624.

59. Ford 2005; and Newell 2005.

Bryant, Raymond, and Sinéad Bailey. 1997. *Third World Political Ecology.* London: Routledge.

Bulkeley, Harriet. 2005. Reconfiguring Environmental Governance: Towards a Politics of Scales and Networks. *Political Geography* 24 (8): 875–902.

Bulkeley, Harriet, and Peter Newell. 2010. *Governing Climate Change.* London: Routledge.

Bumpus, Adam. 2011. The Matter of Carbon: Understanding the Materiality of tCO_2e in Carbon Offsets. *Antipode* 43 (3): 612–638.

Bumpus, Adam, and John Cole. 2010. How Can the Current CDM Deliver Sustainable Development? *Wiley Interdisciplinary Reviews: Climate Change* 1 (4): 541–547.

Bumpus, Adam, and Diana Liverman. 2008. Accumulation by Decarbonization and the Governance of Carbon Offsets. *Economic Geography* 84 (2): 127–155.

Callon, Michel. 2009. Civilizing Markets: Carbon Trading between In Vitro and In Vivo Experiments. *Accounting, Organizations and Society* 34 (3–4): 535–548.

Castree, Noel. 2003. Commodifying What Nature? *Progress in Human Geography* 27 (3): 273–297.

Castree, Noel. 2008. Neoliberalising Nature: the Logics of Deregulation and Reregulation. *Environment and Planning A* 40 (1): 131–152.

Conestoga-Rovers & Associates. 2006. González Catán and Ensenada Landfill Gas Project Development Document. Document Version Number 5. March. Available at http://cdm.unfccc.int/Projects/DB/SGS-UKL1146836073.39/view, accessed May 29 2012.

Corbera, Esteve. 2005. Interrogating Developments in Carbon Forestry Activities: a Case Study from Mexico. Unpublished Doctoral Thesis, University of East Anglia, Norwich.

Ford, Lucy. 2005. Challenging the Global Environmental Governance of Toxics: Social Movement Agency and Global Civil Society. In *The Business of Global Environmental Governance,* edited by David Levy and Peter Newell, 305–329. Cambridge, MA: MIT Press.

Fuhr, Harald, and Markus Lederer. 2009. Varieties of Carbon Governance in Newly Industrializing Countries. *Journal of Environment and Development* 18 (4): 327–346.

Goldman, Michael. 2005. *Imperial Nature: The World Bank and Struggles for Social Justice in an Age of Globalization.* New Haven: Yale University Press.

Kossoy, Alexandre, and Philippe Ambrosi. 2010. *State and Trends of the Carbon Market 2010.* Washington D.C.: World Bank.

Levy, David, and Peter Newell. 2002. Business Strategy and International Environmental Governance: Toward a Neo-Gramscian Synthesis. *Global Environmental Politics* 3 (4): 84–101.

Lohmann, Larry. 2006. *Carbon Trading: A Critical Conversation on Climate Change, Privatisation and Power.* Dorset: The Corner House.

Lohmann, Larry. 2009. Toward a Different Debate in Environmental Accounting: The Cases of Carbon and Cost–Benefit. *Accounting, Organizations and Society* 34 (3–4): 499–534.

Lokey, Elizabeth. 2009. *Renewable Energy Project Development Under the Clean Development Mechanism: a Guide for Latin America.* London: Earthscan.

MacKenzie, Donald. 2009. Making Things the Same: Gases, Emission Rights and the Politics of Carbon Markets. *Accounting, Organizations and Society* 34 (3–4): 440–455.

Mansfield, Becky. 2007. Articulation between Neoliberal and State-oriented Environ-

mental Regulation: Fisheries Privatization and Endangered Species Protection. *Environment and Planning A* 39 (8): 1926–1942.
McAfee, Kathy. 1999. Selling Nature to Save it? Biodiversity and Green Developmentalism. *Environment and Planning D: Society and Space* 17 (2): 133–154.
Newell, Lucila. 2010. Rubbish Politics in Buenos Aires. Unpublished PhD dissertation, Milton Keynes: Open University.
Newell, Peter. 2005. Race, Class and the Global Politics of Environmental Inequality. *Global Environmental Politics* 5 (3): 70–93.
Newell, Peter. 2008a. Lost in Translation? Domesticating Global Policy on GMOs: Comparing India and China. *Global Society* 22 (1): 117–138.
Newell, Peter. 2008b. The Political Economy of Global Environmental Governance. *Review of International Studies* 34 (3): 507–529.
Newell, Peter. 2009. Varieties of CDM Governance: Some Reflections. *Journal of Environment and Development* 18 (4): 425–435.
Newell, Peter, Nicky Jenner, and Lucy Baker. 2009. Governing Clean Development: A Framework for Analysis. *Development Policy Review* 27 (6): 717–739.
Newell, Peter, and Matthew Paterson. 2009. The Politics of the Carbon Economy. In *The Politics of Climate Change: A Survey,* edited by Max Boykoff, 80–99. London: Routledge.
Newell, Peter, and Matthew Paterson. 2010. *Climate Capitalism: Global Warming and the Transformation of the Global Economy.* Cambridge: Cambridge University Press.
Olsen, Karen. 2007. The Clean Development Mechanism's Contribution to Sustainable Development: a Review of the Literature. *Climatic Change* 84 (1): 59–73.
Paterson, Matthew. 2001. *Understanding Global Environmental Politics: Domination, Accumulation, Resistance.* Basingstoke: Palgrave.
Paterson, Matthew. 2009. Resistance Makes Carbon Markets. In *Upsetting the Offset: The Political Economy of Carbon Markets,* edited by Steffen Böhm and Siddhartha Dabhi, 244–254. Colchester: MayFly Books.
Pattberg, Philipp. 2005. What Role for Private Rule-making in Global Environmental Governance? Analysing the Forest Stewardship Council (FSC). *International Environmental Agreements: Politics, Law and Economics* 5 (2): 175–189.
Paulson, Susan, Lisa Gezon and Michael Watts. 2003. Locating the Political in Political Ecology: An Introduction. *Human Organization* 62 (3): 205–217.
Paulsson, Emma. 2009. A Review of the CDM Literature: From Fine-Tuning to Critical Scrutiny? *International Environmental Agreements: Politics, Law and Economics* 9 (1): 63–80.
Peet, Richard, Paul Robbins, and Michael Watts. 2011. *Global Political Ecology.* London: Routledge.
Peet, Richard, and Michael Watts. 2004. *Liberation Ecologies: Environment, Development, Social Movements.* 2nd edition. London: Routledge.
Peluso, Nancy. 1992. The Political Ecology of Extraction and Extractive Reserves in East Kalimantan, Indonesia. *Development and Change* 23 (4): 49–74.
Prudham, Scott. 2009. Commodification. In *A Companion to Environmental Geography,* edited by Noel Castree, David Demeritt, Diana Liverman, and Bruce Rhoads, 123–142. Oxford: Blackwell.
Robbins, Paul. 2004. *Political Ecology: A Critical Introduction.* Oxford: Blackwell.
Sachs, Wolfgang. ed. 1993. *Global Ecology: a New Arena of Political Conflict.* London: Zed Press.

Saurin, Julian.1996. International Relations, Social Ecology and the Globalisation of Environmental Change. In *The Environment and International Relations,* edited by John Vogler and Mark Imber, 77–99. London: Routledge.

Simon, Gregory, Adam Bumpus, and Phillip Mann. 2012. Win-Win Scenarios at the Climate-Development Interface: Challenges and Opportunities for Cookstove Replacement Programs Through Carbon Finance. *Global Environmental Change,* 22 (1): 275–287.

Skjaerseth, Jon Birger, and Jørgen Wettestad. 2008. Implementing EU Emissions Trading: Success or Failure? *International Environmental Agreements: Politics, Law and Economics* 8 (3): 275–290.

Stott, Philip, and Sian Sullivan. 2000. *Political Ecology: Science, Myth and Power.* Oxford: Oxford University Press.

Streck, Charlotte. 2007. The Governance of the Clean Development Mechanism: The Case for Strength and Stability. *Environmental Law* 16: 259–264.

Swyngedouw, Erik, and Nikolas Heynen. 2004. Urban Political Ecology, Justice and the Politics of Scale. *Antipode* 35 (5): 898–918.

UNDP. 2007. *Human Development Report.* New York: UNDP.

UNEP-Risoe. 2010. UNEP Risoe CDM/JI Pipeline Analysis and Database. Available at http://cdmpipeline.org/, accessed February 8, 2010.

UNFCCC. 2005. First emission credits issued under the Kyoto Protocol. Available at http://cdm.unfccc.int/CDMNews/issues/issues/I_WJHSF1N67JGAORWII2BKVAI8O74B5A/viewnewsitem.html, accessed August 8, 2011.

UNFCCC. 2011. CDM statistics. Available at http://www.unfccc.de/cdm, accessed April 4, 2011.

Young, Zoe. 2002. *A New Green Order? The World Bank and the Politics of the Global Environment Facility.* London: Pluto Press.

Zimmerer, Karl, and Thomas Bassett. 2003. *Political Ecology: An Integrative Approach to Geography and Environment-Development Studies.* New York: London: Guilford Press.