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Realizing Local Development in the Carbon Commodity Chain?

*Examining the Political Economy and “Value”
of the Carbon Asset at Multiple Scales*

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Abstract

This paper presents a political ecology analysis of carbon offsets and their role in local development. Specifically it examines the political economic conditions under which local areas are incorporated into market exchange through carbon finance mechanisms and the possibilities for local sustainable development through pro-development certification. Using an analysis of the role of 'value' in carbon commodities, it uses two case study project types as illustrative examples of how local development outcomes are relate to the creation of the carbon commodity. The paper concludes that although certification goes some way to unveiling local social relations, it largely cannot overcome more structural elements to the creation of the carbon commodity that affect local development possibilities. The paper discusses this in light of new climate finance initiatives and the role of monitoring, reporting and verification (MRV). Different constructions of what is valued, in addition to the fostering and scalability of processes that take account of these political economic dimensions and power asymmetries (potentially through MRV), may be useful in bringing the social back in. Policy makers should understand the carbon commodity but place it in context of the social and power relations that are embodied in its production.

Introduction

Carbon finance, and climate finance funds, create emissions reductions that link buyers in developed countries with carbon reducing activities in developing countries. Intergovernmental climate funds, governments, private sector corporations and individuals provide finance to fund emissions reductions in developing countries, gain carbon credits in return and in some cases contribute to sustainable development. These are used as legal compliance tools (e.g. under Kyoto), voluntary actions (e.g. for corporate social responsibility initiatives) or creating broad-based bilateral or multilateral emissions reductions agreements. Carbon finance creates new commodity chains that transcend traditional economic barriers and link developed country emitters with developing country communities and projects by fostering a green economy through the creation of global-local connections (Bumpus and Liverman 2008).

When linked through North/South carbon and climate finance¹, new ‘green’ economies in developed countries have specific effects on communities through the inclusion of new spaces in market transactions through the creation of carbon commodities and their incorporation into market-oriented producer-buyer relationships. This paper examines the effect of international carbon finance mechanisms on local development through a political ecology examination of the political economy of projects, the creation of the carbon commodity, and its relationship to broader carbon governance structures.

I focus on global-local institutional linkages along carbon commodity chains and show how socio-ecological relations affect the commodification of carbon and its fetishisation in global markets. A particular focus is the structure-agency interplay in creating the carbon commodity, including the important role that technology plays in linking global carbon markets to local development possibilities and how this is related to specific pro-development funds and certifications in carbon offsets. The paper aims to step back from the impact assessments associated with the use of certification schemes and governance patterns in offsets and ask questions about the politics, interests and material nature (Bacon 2010) in creating offsets that link global spheres of influence to local places in North-South relations (Newell and Bumpus in press).

Key to understanding ‘bringing the social back in’ is understanding the creation of the carbon commodity in terms of highlighting its local social value: the institutional, material and social dimensions involved in creating tCO₂e as a fictitious commodity; the relative importance of local use values to in the global exchange value of the commodity; and the relationships between the governance systems, markets and buyers, and the people, locations and socionatural relations within which carbon commodities are created. In this way the paper aims to complement others by bringing together critical geographic analysis on the commodification of carbon assets through payments for ecosystem services (cf. Kosoy and Corbera 2010), and more multi-criteria evaluative assessments of the role of carbon finance in contributing to local development (Nussbaumer 2009). It aims for a middle ground that highlights the multi-scalar tensions in the role of commodification, through specific technologies and socionatural and

¹ I use ‘carbon finance’ to describe North-South flows of capital that pay for emissions reductions which in turn create carbon credits used for either compliance under Kyoto (i.e. through the CDM) or through voluntary carbon offset activities (i.e. for marketing or other non-compliance activities). Climate finance, on the other hand, refers to broader structures of bilateral and multilateral funding provided to assist with broad scale emissions reductions (such as through REDD+) and/or capacity building through adaptation initiatives agreed as ‘fast start climate finance’ pledged at Copenhagen in 2009.

economic relations, in the use of markets for environment-development benefits. In this context, this paper provides a geographic interpretation of how locales are wired into broader political economies and spheres of influence by exploring the North-South links and value in commodifying carbon and its effect on access to development benefits in local contexts (Bumpus 2011; Boyd et al. 2009; Liverman 2004; Massey 1994).

An important note is that this paper does not provide a critical explanation of commentary on additionality, but assumes that overall there is a net transfer of funds to developing countries as a result of additional carbon finance. The problems of additionality are covered well elsewhere (Müller 2009; Schneider 2009; Asuka and Takeuchi 2004). The point here is to understand how carbon finance makes a difference to social outcomes. Given that carbon finance creates opportunities for project development, what, then, mediates local social benefits? For example, it can be determined by: local negotiation; type of technology; or policy around method of linking places into CO₂e quantification and commodification. The work here is interested in unpacking the processes and practices that influence local dynamics and how these are reflected (or not) in the global carbon market.

Centrally, the paper asks: *how are local social relations of carbon offsets wired in broader processes and to what extent are standards and pro-poor carbon funds effective in including the social, in light of other factors affecting carbon financed projects?* I hypothesise that although labels may influence project outcomes, the defetishisation of the commodity is not enough to override the inherent specifics of the technology involved, the local agency in mediating project development outcomes or the political economic structures that govern the creation of tCO₂e.

Using a broad political ecology I give a schematic of how different approaches to the carbon commodity may influence the ability to bring the social back in. Although taking a critical approach, this paper aims at finding progressive possibilities within the interstices of current political economic projects by asking, as Mutersbaugh and Lyon (2010) put it, whether ethical commodities might provide new possibilities for social change. Do they provide new avenues for struggle for economic justice because of their neoliberal underpinnings, or are they palliative measures that may even undercut other progressive alternatives to equity distribution? (Lyon 2010) Or, are there certain structural and technological elements that more effectively influence local development possibilities? I ask two main questions:

1. How projects are wired into the wider carbon economy, and with what local development effects (e.g. through carbon standards, particular institutional relationships, and technologies)? And;
2. To what extent are local use values shifted by changing global exchange values that value local development dimensions of credits (e.g. through standards, information, monitoring)?

As a corollary, I then ask how to what extent can the transition to the green economy in developed countries contribute to pro-poor carbon financing through the use of specific international carbon finance mechanisms based on understanding the creation of the commodity and the multiple values it imbues. The paper takes a normative equity approach in understanding how international markets affect, and are affected by, local project-based activities using case studies to understand the creation of the commodity and local effects, who wins and who loses locally, and how local systems are incorporated (or not) into global markets and climate finance deals.

This paper is based on fieldwork carried out for doctoral research between 2006 and 2009, including over 80 semi-structured in-depth interviews with policy makers, communities, project developers and verifiers, and participant observation for eight months in the field. Section 2 provides an outline of the approach and context of the issue illustrating the use of political ecology in understanding North-South links in carbon markets. Section 3 examines the issue and relevance of understanding concepts of value in the creation of carbon commodities. In section 4, I present two case study carbon offset project types – microhydro CDM and improved cookstoves – as illustrative examples, and then discuss these in the context of explaining development outcomes and how lessons may be applied to new forms of climate finance through a political ecology lens in section 5. Finally I conclude in section 6 and present ideas for a future research agenda.

Approach, issue and relevance

North-South links: the political ecology of carbon finance

A political ecology approach allows the understanding the intersections of environment and development in specific contexts (Bryant 1998; Zimmerer and Bassett 2003). Political ecology seeks to explain how local-level cultural and ecological communities form part of (and are influenced by) a much wider set of political and economic structures (Peet and Watts 2004) that often have national and global linkages (Neumann 2009). As an approach to the problem, political ecology is concerned with impacts on local livelihoods from international and transnational processes including the geographies of capitalism and of intervention in the South (Batterbury 2001; Brown 1998; Bebbington and Batterbury 2001; Bebbington 2003: 301). In addition to the translocal linkages for development in the carbon offset, a more micro-level political economy framework suggests that the determinants of access to resources are the result of the exercise of relative power between actors (Ribot 1998; Adger et al. 2005; Bebbington et al. 2006) and the negotiation between business, the state and other non-state actors in local development contexts (Newell and Frynas 2007).

A political ecology approach, therefore, aims to examine the *structural implications and political economy* of the effects of international markets in local places, the *material dimensions* of environments that are transformed and commodified, and the *structure/agency* interplay between actors at multiple scales. These three principal areas are used to inform the case study analysis presented. I leave more post-structural accounts of political ecology aside for the moment (Lövbrand et al. 2007; Callon 2009; MacKenzie 2009). Specifically, the paper draws on the more political economic strands of political ecology that engage the interconnected and multiscale nature of environment-development projects and their linkages to wider spheres of influence.

The approach is especially useful for micro-macro linkages and understands the local effects of global environmental politics, and the reworking of these connections through structure-agency interplay in the carbon markets. The creation of new commodities in the carbon markets brings new geographical areas into market systems, and enlists a host of new actors in creating projects that interact with both local communities and environments (Newell and Bumpus in press).

The changing nature of climate policy and carbon markets in the North has a strong bearing on social dimensions of projects in the south. As global environmental governance of carbon markets and climate finance mechanisms evolve, the inclusion (or

exclusion) of spaces, technologies, ecologies and people in the South is shifted. Understanding what traits the carbon market values – accurately monitored and highly verified carbon reductions, broad-based sectoral reductions, or high development attribute projects – all have specific influences on Southern locations. Likewise, critical accounts of offsets, increased transparency and mobilization of Southern actors reengage global mechanisms, re-working international policy directions (Peet et al. 2011). This is especially important in the context of the current use of markets to govern the climate change that span multiple contexts, and equity debates in climate change that have led to the promise of US\$100bn per year in North-South climate finance to assist in mitigation and adaptation (Ballesteros et al. 2010).

Different governance systems and markets have different effects in developing countries with relation to capacities for different types of projects and varying levels of local engagement. Sometimes carbon finance contributes to business as usual development patterns, or, on the other hand, new mechanisms are highlighting how carbon finance can support win-win local economic development, including through direct engagement with the poor (Simon et al. in Press). A central component of the ability to find progressive possibilities comes from the specific form of technology employed and the transparency of information used in creating the carbon credit, which can be used to ensure appropriate local development (Bumpus 2011).

Analogous examples build on these notions of information and transparency in commodities. Work in fair trade analysis, for example, aims to understand how the governance structures associated with producer-buyer relations affect local access to benefits, types of projects that are preferred, and the allocation of costs and benefits (Bacon 2010). It broadly relates also to value chain analysis in that it analyses “the structure, actors and dynamics of value chains, including examining the typologies and locations of chain actors, the linkages between them, and the dynamics of inclusion and exclusion... and the distribution of value-added and the role of standards in facilitating or hindering participation” (Bolwig et al. 2010: 174). When examining the creation of commodities that aim to foster ethical value, such as pro-poor development, one can consider both the context of social institutions and material practices that make up an ‘ethical formation’ and contribute to its definition (Mutersbaugh and Lyon 2010 p.28). This paper aims to provide an entry into this area for the North-South carbon economy by leveraging questions that have been asked of other ‘ethical commodities’ and apply them to pro-development carbon offsets.

Obscuring local value in carbon commodities

North-South relationships, and social inequality in carbon offsets, can be related to the ‘value’ placed on different forms of carbon finance by different governance systems (Bumpus and Liverman 2008) and their relationship to host communities and economies (Newell and Bumpus in press). Value is multifaceted and not related simply to financial metrics or price (Martinez-Alier et al. 1998). Scholars have shown how the incorporation of payments for ecosystem services into international markets renders local ‘values’ on ecosystems and locations invisible because all metrics are subsumed into one price value conveyed in the international market (Kosoy and Corbera 2010). The single language of monetary valuation through exchange of carbon renders local human-environment, and human-development, interactions and pathways invisible. Ecosystem goods, and the distributional outcomes of development projects associated with carbon finance, are valued differently by different stakeholders, located in multiple geographies from local to regional to global levels. These values may not be captured by market prices alone (O’Neill 2007).

Understanding the role of value, and the creation of commodities, is important in interrogating the broader shifts in climate finance policy and getting to grips with the relations of exchange in market actors across scales, and new power asymmetries that are perpetuated in the global green economy (Kosoy and Corbera 2010). The fictitious commodity of carbon has a price (exchange value in the market) but also simultaneous values at different scales (use value at local scales). Carbon commodities mean that new projects are created in real locations (i.e. by virtue of additionality). This in turn has specific effects on local livelihoods, equity and development pathways. At the risk of overly simplifying, a commodity firstly has a use-value: a thing that by its properties satisfies human wants or needs: "the utility of a thing that makes it a use value" (Marx 1867: 3 in Kosoy and Corbera 2010). The use value of the thing provides a direct value to those who realize it through their social process of labour with the material environment. In this way, the commodity could be considered to be the technology implemented or the local social relations associated with a specific carbon-financed project. For example, the use values in carbon offsets could be considered to be the local effects of a carbon offset project such as reduced indoor air pollution and increased economic savings associated with an improved stove project.

The commodities, produced through carbon finance, however, can obscure the social relations that create them: when they are exchanged they make invisible the information about the social relations behind their production (Jhally 1987 in Kosoy and Corbera 2010). Commodifying carbon has specific effects and relies on discursive, material and political economic procedures that turn information on the carbon reduction into a certified credit that has an exchange value in the market. Abstracting across multiple actors, institutions, scales and definitions, the *tonne of carbon dioxide equivalent that is reduced* is turned into a commodity through processes of individuation (defining a tonne of emissions reduced), abstraction (tuning definitions into information that is commensurable with other similar commodities) and displacement (enabling the commodity to be placed into wider systems of exchange) (see Bumpus 2011). This reduction in a unit of nature produces a fictitious commodity in the form of a tonne of CO₂e.

This process of commodification means that the carbon credit sold in international markets can veil the nuances of its production, dislocating the social and environmental relations that created it precisely because it needs to be commensurable with money, and ultimately, other emissions or emissions reductions. The carbon offset commodity has an exchange value defined by the market price. In some cases, actors, institutions and norms define the market and shape the relative price of carbon credits largely without reference to the social relations that created them. For example, emissions trading schemes that allow the use of carbon offsets (such as the use of the CDM in the EU Emissions Trading Scheme) tend to use the carbon offset commodities as cheap compliance tools: as long as the credit conforms to the GHG reductions regulations of the system, one tonne is seen as the same as another. This process, therefore, commodifies nature and creates fictitious commodities that do not represent the true 'value' of their creation given the social and natural relations required to create it (Polanyi 1944). The social relations to create the conditions of production for a carbon credit are not reflected in the market dynamics that assign a price to the commodity without direct relation to its local use value. Following Kosoy and Corbera's (2010) analysis of Marxian value in Payments for Ecosystem services, we can see that the commodification of nature into carbon markets creates veiled commodities that obscure the complexity of ecosystems, local relations and power asymmetries.

Carbon is a slippery commodity and relies on specific forms of monitoring, reporting and verification (MRV) in order to ensure its commodity status and value in a market. This need for information is a potentially powerful tool for engaging local people given their links to the project sites in two ways. Firstly, as Bumpus and Cole (2010) note, the requirements for monitoring of emissions reductions – the ‘power-tools’ of the CDM – could be used to help ensure local sustainability, if sustainability metrics were included in official reporting. Secondly, the ‘unveiling’ of these local conditions could be used in ethical consumer markets. The value of the carbon asset can take on multiple attributes at multiple locations that can lead to the realization of benefits for multiple actors. These benefits may be able to be leveraged on one hand by socially responsible investors and consumers, or companies may want to buy voluntary carbon reductions for Corporate Social Responsibility activities, and, on the other, by local people, when information and education related to the mechanism is created and conveyed transparently. These lessons learned in early offset MRV implications are important for emerging debates on the role of broader nationally appropriate mitigation actions (NAMAs) and sectoral reductions, including Reducing Emissions from Deforestation and forest Degradation (REDD+).

Ethical carbon? Climate and development in carbon finance

Authors have pointed out a number of times how local equity and development aspects of carbon finance necessarily come second to the creation of the carbon commodity (Olsen 2007; Pearson 2007; Sutter and Parreño 2007). Largely this is because the sustainable development component of carbon offsets created under the Kyoto Protocol’s Clean Development Mechanism (CDM) is not formally defined (Nussbaumer 2009). This is in contrast to the greenhouse gas (GHG) reduction, which is standardized to ensure that a tonne of CO₂e reduced can be commensurate with a tonne of CO₂e emitted. This can be seen, as O’Connor (1998) would put it, as the second contradiction of capitalism in the creation of carbon offsets: the carbon component is commodified, but the ‘development’ component is not formally included, and, therefore, becomes invisible because it has no value in the market. In practice this can be seen through the popularity of projects that have large emissions reductions and little local sustainable development benefits, such as industrial gas destruction. For example, Parnphumeesup and Kerr (In Press) show how large private sector buyers in the compliance market have no preference for sustainable development attributes when purchasing for compliance requirements.

In addition to this formal reason, we have seen so far that, from a global environmental justice lens, the creation of markets to allow Northern countries to buy cheap emissions reductions actually obscures the structural poverty conditions that mean the ‘poor sell cheap’ (Kosoy and Corbera 2010). Multiple structural political economic issues affect the ability to ‘bring the social back in’ for carbon markets, in addition to progressive possibilities that specific agents may be able to enact, as they move between these political economic constraints (Bebbington 2001).

Nevertheless, the market for ‘premium’ high development carbon offsets is growing as calls from both developing country actors and market-based actors come to create initiatives to address the lack of ‘D’ in the CDM and in carbon finance more generally (Parnphumeesup and Kerr in Press; Liverman and Boyd 2008). This movement has been fostered through specialist funds, such as the World Bank’s Community Development Carbon Fund (CDCF), and the emergence of certain carbon standards

(e.g. the Gold Standard, Climate, Community and Biodiversity Alliance standard) that specify engagement with local (developing country) partners in their interface with external carbon finance. So called ‘premium’, ‘boutique’ or high development carbon offsets are moving into a position whereby the local dynamics of the credits production (i.e. its use value) are represented in its value in the market (i.e. its exchange value, or price). This paper aims to highlight these possibilities and show how the social can be brought back in to the carbon finance green economy.

Investors look for multiple attributes bundled into the carbon asset (‘carbon *plus*’) because of the volatility in carbon compliance markets and the need to hedge against risk. When extra components of offsets have value in the market, it is in the interests of proponents to bundle them together. For example; commercializing biodiversity credits alongside carbon. This has meant an increased focus on ‘layering’ multiple assets using the carbon price as a proxy for other benefits that can be used as part of wider corporate responsibility initiatives. Simultaneously, local communities aim to rework incoming carbon finance by leveraging their social, human and natural capitals in order to realize development benefits. The conceptualization of value therefore exists at multiple components of the carbon commodity chain and is not restricted to purely financial metrics.

Nussbaumer (2009) shows that premium labelled projects, such as those included in the Gold Standard, slightly outperform non-labelled projects in terms of social benefits. Similar to other ethical commodities, high development carbon offsets require certification in order to “render ethical qualities visible to the consumer” (Mutersbaugh and Lyon 2010: 27). The role of standards lies in informing consumers about the social and environmental conditions in which the offset projects take place, so they can influence demand and make choices about buying pro-poor carbon projects. Certain buyers are willing to pay a premium price for these credits precisely because they convey these local conditions (Gold Standard 2011). This could be viewed as attempted ‘unveiling’ of the carbon commodity in an attempt to re-commodify the social relations (development aspects) of its creation (Hudson and M. Hudson 2003; Bryant and Goodman 2004). This uses consumer choice to create a demand that aims to drive change at the local end of the carbon commodity chain. As the Gold Standard website (2011) notes:

The Gold Standard approach means lower project risk through more inclusive and thorough design, higher investor confidence, greater access to carbon finance, better projects for communities and a superior price due to higher demand for a premium product.

Information, combined with upgrading benefits to local actors, may be used as potential solutions to the fetishism of carbon commodities (Kosoy and Corbera 2009). Examples include the use of Fair Trade coffee to both increase profits for local farmers whilst commanding a price premium in consumer markets by defetishising the commodity. Others suggest that the connection of international fair trade labels ‘shortens’ the distance between consumers and producers. While economic benefits may not be guaranteed, inclusion in fair trade networks may allow increased ‘upgrading’ opportunities (Muradian and Pelupessy 2005). Global Value Chain literature argues that upgrading is about acquiring capabilities and accessing new market segments through participation in particular chains, including skills and capacity development or producing new products associated with the value chain (Bolwig et al. 2010). Likewise, as Lovell et al. (2009) show, the patterns of consumption of carbon offset credits are

having a material effect on the ways in which carbon offsets are produced. NGOs, companies and government buyers are shaping the kinds of production that occur in offsets as a result of how consumption practices produce narratives that support new forms of carbon offset production. These narratives aim to demonstrate the ‘social life’ of carbon offsets (Bryant and Goodman 2004).

Others note, however, that the use of standards continues to legitimize the role of industrially-led interactions between Southern producers and Northern consumers, obviating alternative modes of economic production (Raynolds 2002). In addition, such labelling schemes are not hegemonic in their structural determination of producer-consumer relations. They are negotiated at multiple levels between various actors including corporations, local producers and community organizations, and rely on alternative governance mechanisms that should aim to ensure greater equity (Taylor 2005). Such equity is not always enabled given the underlying market pressures that still exist, given that fair trade works both against the existing market, and within it (*ibid.*), and that the social relations embodied in commodity production can never fully be realized in exchange values, even with attempted unveiling of commodities (Mutersbaugh and Lyon 2010). Therefore, we can see that the carbon credit commodity is created through the socio-natural technical complexes determined by capitalist actors and the market evolution in general. To what extent can carbon labelling influence local political economy, technological specificities and local use values tend to override the ability for global exchange value to significantly shift development?

Connecting carbon projects

The individual project case studies, and the general project types, I use here do not form comparative assessments. Instead they are used as illustrative examples of different mechanisms for understanding local to global interactions for social inclusion through carbon finance following the need to ‘trace down’ global environmental politics of constructed carbon markets to local contexts and their concomitant effects on global reworkings (Newell and Bumpus in press).

I focus on two illustrative project type examples: a micro hydro plant funded by the CDM and the World Bank's Community Development Carbon Fund, and improved cookstoves examples. I examine their global-local links; how they are integrated into ethical carbon standards, and the requirements of technology.

Hydro in Honduras: pro-development funds, labels and local agency

Creating a pro-development CDM micro hydro project: global-local links

This small scale, 13MW run of river hydro project gained finance from the World Bank's Community Development Carbon Fund (CDCF) and was successfully registered as a small scale CDM project in 2005. Explicit to the creation of the project was the connection to the CDCF, which was showcasing the project as an example of how carbon commodities can create local community development benefits. The specific role of the CDCF was important to the existence of the project given the rejection of the project by the Prototype Carbon Fund and low credit purchase prices by national government carbon funds.

Its connection to the carbon economy aimed to ensure that the project developer would: assist communities in reforesting denuded hillsides in the watershed; provide electrification for communities near to the hydro project site, and provide employment opportunities, at specified levels for local people in the construction and maintenance of the project (CDCF 2005). In this way, the specific aims of the fund as selling 'carbon plus development' projects at a global level, were incorporated in to the local requirements for operation.

Development assistance was, however, contingent on the communities' willingness to work with the project developers in order to facilitate the effective running of the hydro dam, and, therefore, its generation of the carbon commodity (tCO₂e) for the Bank. The project developer, therefore, had the flexibility to choose which communities received assistance for electrification, and to assist them in the manner that they deemed appropriate. Primarily assistance was focused on the effective running of the dam in order to create the carbon commodity, not based on addressing specific local development needs; a common outcome in CDM projects where 'carbon comes first'. This is, however, not surprising given that without any CO₂ the project would be classed not to exist (i.e. its additionality). As the director of the project developer noted, "it was some development, or no development... if we would have been forced to deal with some groups and not had the flexibility to work around them, it could have stopped the project before it was completed and we would have failed miserably" (interview with project developer, 2006).

As a result, the project developer focused local development initiatives on communities that could assist in the effective functioning of the dam, such as those that could provide workers, had important watersheds and were on the main road and electricity line. A local dispute, however, meant that electrification benefits (the biggest additional development benefit beyond providing trees for reforestation and employment) bypassed one community next to the dam facilities. In addition, the provision of electrification to other communities did not go so far as to ensure all community members were able to access the main line, and as a result some of the poorest members still were without electricity, even with the main line running next to their houses (see

Labelling the project

In addition to extra finance from the World Bank to mediate local differences and improve monitoring, in 2008 the project was retroactively developed as a Gold Standard by German carbon offset retailer, Atmosfair GmbH. This required a second round of stakeholder meetings, and new documentation on the project, including the creation of the GS sustainability matrix, which asserts sustainable development benefits. The project passed with a +10score (Sterk et al. 2009), attained through its existing operations, which were deemed by international and local Honduran NGOs, and the verifiers of the project, to be sufficient to qualify for the GS.

The stakeholder meetings detailed the role of the GS in the project and people noted especially the benefits coming from improvement of the electricity supply, electrification of nearby communities without electricity supply, job creation and the accompanying reforestation programme. They also noted the need for the electrification of the very poor households, which still remained without electricity (Atmosfair 2008, p.11) (Table 2). The ability to link local use values to the exchange value can be seen in the price premium that GS Certified Emissions Reductions can take. For example, Atmosfair officials estimate that the additional revenue received from using the GS is about three Euros per tCO₂e. This translates into additional CER revenue of €11.094,92/year, far exceeding the costs of additional monitoring and verification

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Table 1: Development benefits in local communities.

Community	Development benefit	Institutional and technical involvement in providing development
Community 1 – near to the hydro site	Electrification (85% electrified)	WB mandated electrification of specified number of homes. Project developer involved for good public relations
	Reforestation	Watershed not so important to Project developer, but worked with water group of Community 1 for some reforestation; assisted in providing new water line to community
	Employment	Project developer recruited heavily from Community 1. Training for workers given on the job
Community 2 – in important watershed hillsides	Electrification (56-85% Electrified)	WB mandated some clerical help for applying for electrification. Project developer went beyond and electrified main line into community
	Reforestation	Community lands very important to watershed used by Project developer. Project developer provides all saplings and transportation of them to community lands
	Employment	Jobs offered, but less contact than with

		Community 1
Community 3 – near to the hydro site	Electrification (0% electrified):	Land access issues and conflict have led to no electrification of the community by Project developer. WB stipulations are flexible and based upon communities that are not in conflict with Project developer.
	Reforestation:	Some reforestation, but community lands less important than in Community 2
	Jobs:	Jobs offered and some workers from Community 3 at plant

Technology needs and local agency in shaping outcomes

Communities were important in providing ecosystem services, such as watershed protection, and operational services, such as construction labour, for the effective running of the hydro plant.

The political economy of implementing development associated with the project meant it went as far as it related to the functioning of the technology in the dam, or the community relations needed to mitigate operational and political risk in the area. For example, electrification of the closest community was also not an ‘additional’ development benefit brought about by the project’s relation to “development plus carbon” finance (CDCF 2005), but was deemed good local business relations for the company (interview with project developer 2006). This meant that the project followed standard patterns of capitalist development that was mediated by communities’ relationship with the company, their provision of workers to the project, ownership of lands containing important watersheds, and social organization and mobilization. For example, organised communities, with natural capital valuable to the project developer, renegotiated development benefits, whereas communities that controlled some valuable natural capital, but were not organised to put forward united initiatives to negotiate more development, found that they received significantly less assistance (see Table 2).

Table 2: Characteristics of communities and development benefits

Community	Benefits	Importance for access to site	Importance as workers	Importance for watershed
#1	85% Electrified	High	High	Low
#2	54-85% Electrified	Low	Low	High
#3	0% electrified	High (previously)	Low	Low

Despite this, the company went beyond requirements of carbon finance and quadrupled the amount of houses electrified, more to create its ‘social license to operate’ (cf. Moon 2007), than specifically to fulfil the requirements dictated by pro-development carbon funds. In this way, even though the project was promoted through a fund focused on

making carbon finance work for the poor, local agency and requirements we more effective in improving local development possibilities.

In sum

Beyond initial financing, this project can be more seen within debates on corporate activity in developing countries and their local CSR initiatives to assist project success (see Newell and Frynas 2007), than pro-development carbon finance. As the WB made clear, local development initiatives were to be based on material project success, similar to CSR negotiation that relies on “material interests” of firms operating in the South (Newell 2008a). The inclusion of the Gold Standard label reaffirms, as others have pointed out (see Sterk et al. 2009), that the GS label is more likely to be attached to projects that already have sustainable development attributes, rather than improving upon these attributes. It did not, in this case, specifically mediate local uneven development, although it has helped ensure continuation of social programmes running at the plant.

Carbon-financed cookstoves: technology, monitoring and labelling

This section broadens out from a single case study to illustrate the points of global-local relations and the creation of carbon commodities in the case of improved cookstoves. It illustrates the global-local links and the form of technology used that influence local values and global commodity value. Given the limited coverage in the literature, this section relies on fieldwork and Simon et al. (in press), using three case studies to show that carbon finance works to scale up local stove economies and provide local capacity building for stove monitoring and verification.

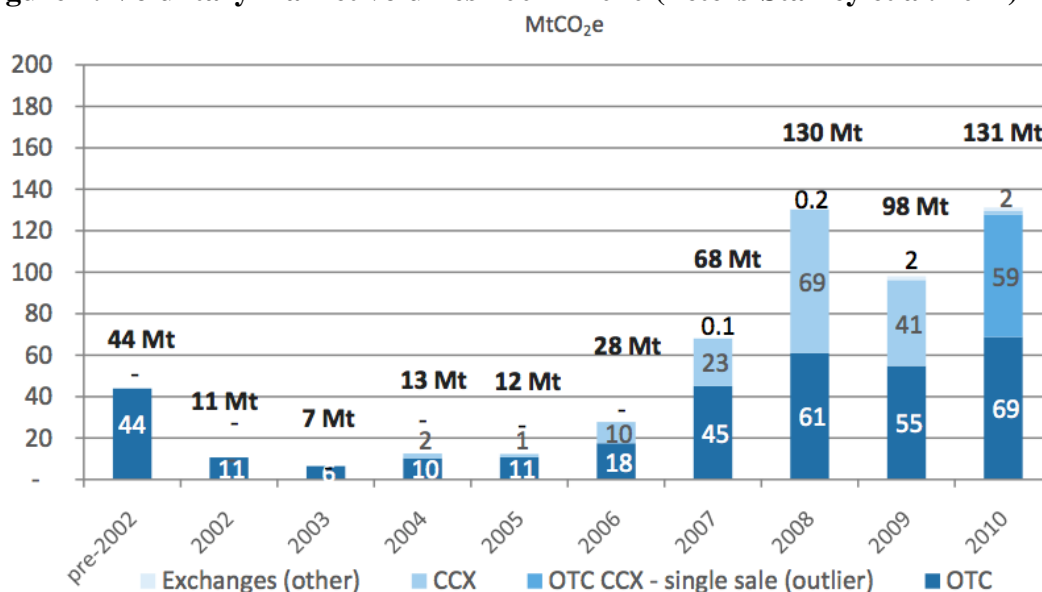
Creating cookstove carbon projects: Global-local links

Improved cookstoves (ICS) aim to reduce indoor air pollution for families that currently use traditional stoves, such as the three stone fires. Improved stoves aim to be more economically efficient in burning biomass, reduce local deforestation and provide a chimney to extract emissions from the household. The ability to reduce GHG emissions through ICS programmes has also meant that carbon offset financing has begun flowing into stove projects in order to generate emissions reductions credits (Mann 2007). This has been primarily in the voluntary offset market, although projects have started to be developed in the CDM since methodologies were approved in late 2007. Given the technology’s ability to reduce GHGs and create local development benefits, there is increasing agreement within development and climate science communities that stove replacement programs can function as a “win-win” solution to pressing climate and development concerns (Adler 2010; GTZ 2010). This can be considered what Bumpus (2009) calls an “integrated carbon-development” framework. Despite the possibilities for win-win, Simon et al (in press) note that this not a given outcome in the case of cookstoves, and that multiple technological, social and political factors influence the ability to use carbon finance for ICS projects.

The rise in the voluntary market has meant that interest in cookstove projects as carbon offsets has increased as project developers saw a chance for cheap emissions reductions and high quality sustainable development co-benefits that could be communicated to buyers interested in corporate social responsibility marketing (Tayaib 2006; Hamilton et al. 2009). Carbon standards have been developed to assure quality in the market

(Bumpus and Liverman 2008), including the registration of cookstove methodologies and projects to the ‘Gold Standard VER’ (Gold Standard 2009).

Figure 1: Voluntary market volumes 2002 – 2010 (Peters-Stanley et al. 2011)



Labelling cookstove projects

The Gold Standard was the first internationally recognized quality standard to pass methodologies on improved cookstoves (Gold Standard 2008) (see

Table 3). The ability for stoves to actively contribute to development at both local economy scale up and household health, environmental and domestic economy efficiency meant that the technology was a prime candidate for achieving the sustainable development aims of the standard. The more difficult aspect was certifying the carbon reductions created. However, as the case studies below show, the ability to more closely connect the intricacies of carbon finance with local operators opens up challenges in capacity building, but opportunities in conveying the conditions of production embodied in the carbon credit. For example, ClimateCare describes their cookstove project online, including photos and comments from local stakeholders illustrating the local benefits it provides. This has been described as the ‘flight to quality’ in carbon offset projects: providing health and finance to some of the world’s poorest regions. As this asset management company notes: “The popularity of energy efficient cookstove projects has soared as they claim to provide many additional benefits for households in developing countries, allowing users to slash their cooking fuel bills while also cutting air pollution and reducing health risks” (Islan 2011).

Table 3: Examples of stoves projects hosted under specific carbon standard

Standard	Projects in pipeline	Scale of project / carbon reductions	Stove Projects registered	Example countries	Projected volume of credits from existing and pipeline projects
CDM	4 (0.08% of total projects in CDM pipeline)	Only small-scale possible	1	Nigeria (registered); Nepal (pipeline), Bangladesh, Mexico, Guatemala (CDM PoA pipeline)	113,100 t/CO ₂ e CERs
Gold Standard VER	9 (18.75% of total projects listed on the Gold Standard)	Large scale possible	3	Uganda, Ghana, Mali (registered); Africa as regional focus (pipeline)	1.1 million t/CO ₂ e VERs

Linking the costs of production and the role of the development benefits, a director at ClimateCare noted: “The credits generate a higher market price because of the social benefits, but also because the cost of doing the projects, is higher.” He also noted that GS certification with stoves can fetch between €2-4 more than, for example, non-GD certified wind farms in Turkey. As another market participant from the Improved Cook Stoves for East Africa (ICSEA) noted: “There is always going to be a market for good quality credits. Even compliance buyers want to know there is a good story behind projects.”

Local use and monitoring of the technology for carbon credits

Carbon commodities created through stove projects rely on: 1) local people using the technology; 2) the effective monitoring and verification of people’s use of the stoves. ICS technology has a significant bearing on its ability to create carbon commodities for exchange. Unlike a hydro project, which is centralized, generates electrical power connected to a grid and is therefore easy to monitor (electronically) and verify the emissions reductions it produces (by displacing fossil fuel burning generators), ICSs are decentralized, rely on understanding the renewability of biomass used, and household cooking patterns such as local household average use of the stove. As a result, their ability to be incorporated into standards that commodify carbon reductions is much more complicated (GTZ 2010; Simon et al. in press). Early carbon offset stove project development was hindered by the technical difficulties in effectively measuring emissions reductions and applying these to certification standards, as shown in an early carbon offset project in Honduras (Bumpus 2009). A technical detail that meant ICS projects were considered as avoided deforestation under the UNFCCC also meant that they were not included in the CDM until 2007.

To overcome these technical difficulties, project developers, like ClimateCare, developed new methodologies and passed them in the Gold Standard. Current

methodologies passed by the Gold Standard VER rely primarily on baseline studies and statistical sampling of types of stove users (e.g. domestic users such as households; industrial users such as schools). These rely on local capacity building, joint understanding of the requirements of carbon finance monitoring and reporting, and stove maintenance and replacement programme development (JPMCC and CEIHD 2009).

The methodologies therefore rely on much higher levels of local participation (incorporating more data from local people on the decentralized use of the stoves), than say a centralized hydro project does, to make the carbon credit legible in the global sphere. Some have noted that the requirement for larger scale local participation in creating the carbon commodity has opened space for the renegotiation of local benefits (i.e. through a share of the revenue created by the selling of the carbon credits) (Bumpus 2011) precisely because of the difficult commodification data requirements.

As the Gold Standard (2011) notes:

We are proud that our credits command this premium over other standards since it reflects the credibility, honesty, integrity and robustness of the standard and our brand... With sustainable development and environmental co-benefits being maximised and ensured via the Gold Standard's MRV, investing in quality Gold Standard carbon credits is an investment in your own brand, demonstrating to clients, staff and suppliers sincerity towards environmental and corporate social responsibility.

As a result the use values locally feed directly into the global exchange value because of both the labelling and connection but moreover because of the technology and its inherent link to development.

Some challenges exist too, for example, where capacity building workshops are not available (Microsol 2011), the need for arduous calculating practices for locally non-renewable biomass, and reconciling international carbon accounting standards with the reality of working with local stove vendors who may be illiterate (GERES 2011). Monitoring of data as stove sales increase has also provided problems. These challenges need to be overcome to commodify the credit and gain local use values from global carbon commodity exchange values.

In Sum

The requirements for local monitoring and economic scale up in carbon cookstoves means that incorporating carbon finance affects how they are maintained over time and the political economic relationships that are created to commodify the carbon credits. However, carbon markets can provide a forum for generating and leveraging financial incentives to maintain stoves, monitor them over time and support local users. Simon et al (in press) note that inherent symbioses between development and the carbon economy are needed as leverage points for overcoming mutually supported impediments, and can thereby instil confidence in collaboration between program managers, financiers and local institutions to overcome these challenges and create global change through cross-scale connections.

Discussion

These case studies aim to provide examples of the kinds of processes and dynamics that link local development to global carbon markets with a focus on how local social relations are reflected in global exchange relations.

The political economy of development through carbon finance

It is clear to see from these case studies that global-local governance arrangements, through carbon finance, affect local possibilities for development. Firstly there is the macro level finance inclusion that allows the creation of the project: the projects have material impacts on local social (and ecological) relations because – by virtue of additionality, if we assume this as given – they would not exist if it were not for carbon finance. The hydro dam relied on bespoke community-oriented funds to help provide finance. This fund would pay a premium on the credit precisely because the project had high community development attributes (World Bank 2006). Likewise, the incorporation of carbon finance into the cookstove projects meant that local commercialization and capacity building, including, monitoring the carbon reductions, was required to make the amount of reductions viable for investment. These governance arrangements are needed to create and effectively commodify the carbon asset: without initial finance the carbon projects cannot get underway, and local use of the project (generating electricity; using cookstoves) was required to carbon reductions.

Given this, what then are the specificities of carbon finance at a local level? For example, in the hydro project, the inclusion of a pro-community development fund did not materially change local development benefits beyond local company CSR dynamics. Instead, the political economy of community-company relations defined who would receive local development benefits from the project. In the case of electrification uneven development existed, but in terms of overall impact, we can see that the local agency of communities and the company executives themselves went beyond the stipulations of carbon finance to create more development benefits in the form of extra community electrification as a result of local social and natural capitals that enabled a negotiation on benefits (Bury 2004). The community organisation, *in combination* with property rights over valuable natural capital (for both the community and the project developer), allowed certain communities to negotiate with the company, and directly influence their ability to access benefits from the project. The ability to mobilize for local development is was contingent on social, human and natural capitals, but not carbon capital from a pro-development or development label *per se*, in order to assist in negotiation and transformation of useful livelihood opportunities.

On the other hand, the cookstove projects were funded by voluntary market developers because of the ability to create more innovative methods (Bumpus et al. in Review) and use ‘local stories’ that could be sold in the retail market (Katherine Hamilton et al. 2010). These projects were included into the GS, not because of ‘extra’ activities that could be undertaken to improve the project’s local success, but because of the technology’s inherent symbiosis between carbon reductions and sustainable development. In this way project developers *relied* on local agency and ability to create the project and commodify the carbon effectively. This was predicated on the specificities of the technology (decentralized, difficult to measure, number of technical challenges to overcome), which then could be used to characterize and sell the credits as ‘pro-development’.

Implication 1: Therefore, the local relations between specific actors must be considered as integral to understanding how the local dynamics of carbon financed projects work and the *re-working* of the outcomes at local levels. As shown by others, these case studies highlight that in carbon finance we must address the equity implications of structure, but also incorporate the need for local agency in mediating outcomes (Liverman and Boyd 2008). A key policy outcome here would be to ensure interaction from local people at a systemic and integral way as the project is developed and as it continues to generate emissions reductions.

Using labels for the carbon commodity

In terms of global-local governance for the hydro project, the inclusion of the Gold Standard also did not ‘improve’ upon existing development patterns, although it undertook increased analysis of local benefits. The label was included after the project benefits were realized, and although accurately conveying the fact that the project did help local people, the label does not go far enough to defetishise the political economic negotiations that existed in the local context of creating the project, and the communities that had difficulty in accessing benefits. In this way local use values that had inherent development benefits were not valuable enough in the international marketing of the project to significantly change local development patterns. The processes to enable inclusion in the Gold Standard also did not pick up and mediate these local differences. The value in the premium market was not enough to create even development within the catchment of the project beyond the CSR activities of the company involved. This is not to say that the project did not have local benefits – it did – the outcome here simply shows that in the context of global-local structure-agency interactions, the attempted unveiling of the commodity at international levels did not substantively change local outcomes. This outcome relates to others’ work that shows how “linking commodity and value chain analysis to a consideration of how production, distribution and consumption are situated in networks of relational power rather than in linear chains”, and is a potentially powerful tool in enabling us to understand the reconfiguration of local and regional economies (Dicken and Thrift 1992 in Smith et al. 2002: 54).

Building loosely off of Global Commodity Chain analysis this paper has aimed to incorporate the notions of value that are used in creating carbon commodities. Although scholars have focused on the market price of commodities at different stages in the value chain I have taken an alternative approach to understand carbon commodities as conceived of both use value and exchange value (Harvey 1982; Smith et al. 2002). For standard centralized projects with ‘bolt-on’ (i.e. not integrated carbon development) development benefits, standards may help in conveying local stories. However as they currently stand, the detail of local conditions may be conveyed differently in different places, leading to a commodity that remains occluded. This has implications for people *possibly* buying credits with a false sense of security about local conditions. However, this is still a progressive movement, which other multi-attributive (Sutter 2003) assessments may come in use to support this understanding of local benefits, and it certainly goes further in addressing local conditions than the standard investment patterns in carbon finance, showing that adding extra stages can potentially raise profits (e.g. GS). Others, however, note that this creates an onerous challenge to making the market work profitably (and hence its existence). More work is needed at a meso-analysis level to understand the dynamics of including this increased information, and its relative efficacy, on local use values for its impact on exchange values in the market.

As Bacon notes for Fair Trade coffee governance, like other third party certification programmes, continues to be “a deeply contested, socially embedded process, subject to an array of political economy constraints, personal convictions and path-dependent contingencies” (2010: 112). This is not dissimilar to the process of linking local to global through standards in carbon offsets and the expression of local use value in global exchange values.

Implication 2: Although there is some correlation between labels and improved social benefits, but it is still unsure whether it is a case of the tail wagging the dog: do the labels mean improved local development, or do certain project types and global-local political economic relationships mean that labels are able to be used? Sterk et al. (2009) note that the value in the GS is that it can help certify projects that already have sustainability benefits. Others have shown that labels can have some effect on social aspects of projects, but that this still seems to be marginal and the correlation/causation dilemma still exists (Nussbaumer 2009). Although we can see that the use of labels aims to set aside those projects that inherently include high local development possibilities, whether they be ‘integrated carbon development’ or simply the outcomes of local (and translocal) political economic relationships, we should be attentive to the limitations of the role of standards in helping to ensure local development.

Firstly, aiming to reveal local social relations to the fullest extent possible, may render the use of markets inappropriate because a) transaction costs may become prohibitively expensive; and b) the uneven development characterized by market expansion (Kiely 2007)) is likely to be more strongly influenced by technology type and political economic patterns and structure-agency interplay, than the defetishisation of the commodity in the market. It is impossible to convey completely local conditions of production. For example, as seen in the case of the hydro project local uneven development within and between communities is not fully conveyed in the documentation. As a result, there are possibilities for labels to undermine the nuances in local processes: although they describe local effects, they necessarily cannot fully convey them through associated stories, nor mediate local power asymmetries and dynamics. For example, In relation to production knowledge of commodities, Appadurai (1986: 42) argues that “the production locus of commodities is likely to be dominated by culturally standardized recipes [knowledges] for fabrication’ because of the localized nature of most production”. Key to the outcomes here is a focus on process rather than tick boxes.

Secondly, if the standards were to pursue such transparent monitoring of social processes, true unveiling could result in drivers for more local benefits, but may also increase reputational and financial risk to the investors because highlights the largely unavoidable inherent uneven development associated with projects. In such cases, investment for *any development* would be held back if mandatory regulation specified such onerous reporting.

Thirdly, high development projects may hold their value better than standard industrial projects when emissions reductions markets go long because companies can use them in more general corporate social responsibility activities. However, as a general rule, large scale emissions reductions will be sought where they are the cheapest: in the absence mandated development attributes through a compliance standard, they will likely remain the ‘icing on the cake’ for carbon offset financing.

Future research requires more systematic attention on multiscale political economic analysis (rather than just taxonomic approaches based on PDD analysis). Better still, if political economic information on local development is provided in the process of creating the carbon commodity, through MRV, meso-analysis may be undertaken and structural development of carbon finance mechanisms improved.

On the other hand, these directions may follow other 'fair trade' markets, such as coffee, where buyers and producers are being linked through 'traceability' and increased transparency in the commodity chain (Raynolds 2009). Directions in carbon MRV may hold possibilities for this.

Wider policy implications and progressive possibilities

Nuanced understandings of how global GHG mitigation and carbon offset development policies proceed on the ground are required to better elucidate 'who wins' and under what conditions. As Sterk et al. (2009) quite correctly note, given the voluntary nature of labels, it would be too much to ask to expect the GS to make non-sustainable projects, sustainable. This analysis also goes some way to supporting their conclusion that the GS provides an upward pressure for sustainability on the market as a whole, however it also shows that the GS would need to take into account more locally specific uneven development outcomes in projects if it is to convey accurately over time the real conditions of production in offsets.

Bumpus and Cole (2010) suggest using the 'power-tools' of the CDM monitoring and reporting and verification (MRV) to incorporate reporting on *processes* for local development at the verification stage. This would provide an ongoing examination of the continuing development benefits associated with a project. Using this information, multilevel political economy analysis could then assist in understanding better local and community perspectives, and their relation to national level development policy and transnational carbon finance. The GS has two consultations, but monitoring of SD benefits could be part of the monitoring of carbon in a continual basis to understand continued social benefits, especially useful where carbon reductions are decentralised and have intrinsic connections to local use values. Meso-analysis of these projects would then help decipher more general tendencies in the carbon-development interface in carbon offset projects, building on the meta-analyses of others (see Olsen 2008; Olsen and Fenhann 2008) and case study analyses. By providing local analyses, this approach would help engage national priorities for SD, including local-national-international directions on MRV, a possible gap in current SD analyses for offset projects (Muller 2008), and a gap that commodities labels tend to ignore (Mutersbaugh and Lyon 2010).

This analysis also supports conclusions of others working on forestry based offsets in that if land management, and other offset, practices are to fulfil their sustainable development objectives, they will have to address issues of fairness and equity, whose priorities count and who benefits, which may require developers to actively invest in the development of local institutions (Adger et al. 2005; Boyd 2009). Key to equity angle is transparency and access to information on both the carbon reductions and the political economic conditions and processes that facilitate them. It also, therefore, contributes to advancing debates on MRV for difficult to measure carbon projects. For example, centralized MRV systems being established for REDD projects could be complimented by communities providing decentralized forest-specific data (Agrawal and Angelsen 2009; Phelps et al. 2010). The role of local communities largely depends on the practicality and acceptability to international markets of low-cost community based

MRV strategies, whether this is feasible in the market (Phelps et al. 2010) and how effective local governance might be operationalised (West 2010). In the case of projects that require local use and decentralized monitoring, like the cookstoves, such MRV may help strengthen local participation, however, the provision of information on the link to the wider carbon market, the specific roles of actors, and the development of local institutional capacity seem to be essential pre-requisites for achieving benefits this way. Increased recognition to support less powerful actors who are integral to the governance of carbon reductions (i.e. forest stands) is essential in this connection (Hiraldo and Tanner 2011). In a similar way that decentralized energy offsets aim to help the scale up of multiple local economies (stove making, distribution, maintenance etc.), so should the application of REDD+ policies considering wider economic effects created by the mechanism and the need to hear the unheard voices affected by it (Ghazoul et al. 2010; Palmer Fry 2011). Others have shown that combining forest standards that include community dynamics and MRV may be useful in creating multiple benefit projects (Merger and Williams 2008). This analysis has shown that for labels to convey local conditions as possible, transparent information on the political economy of local social relations is essential. The combination of political economic analysis, increased use of MRV and transparency, may indeed be mutually supportive for the creation and use of pro-social policies and standards in carbon finance.

Conclusion

The impacts of climate finance have been studied by a wide disciplinary variety of scholars. This paper draws on the emerging literature found in the critical geographies of the environment. Through the lens of global-local linkages and commodification, there are possibilities to see how the market excludes social dimensions, and possibilities for bringing them back in. This analysis aims to provide some empirical depth to the difficult trade-off between local sustainable development and carbon reductions pointed out by other scholars (see for example, Boyd et al. 2007; Olsen and Fenhann 2008), and the possibilities to include affected communities in local CDM governance (Bozmoski et al. 2008). Moreover it shows that the local social effects of the global economies of carbon must be understood through the negotiation, and renegotiation, of benefits with communities that have differing abilities to benefit (Newell and Bumpus in press). This is in addition to understanding how new forms of certification are aiming to incorporate communities and local social relations into global exchange values.

I have shown that local, and global-local, political economy, in combination with technology type, have a direct bearing on development patterns and use two cases studies to illustrate these points. The role of labels in certifying projects has somewhat lesser impact, although this conclusion is in light of the project specificities and cannot be generalized.

Overall, the paper aims to show that for technologies or projects that contain “integrated carbon development”, progressive possibilities may exist for brining the social back in and strengthening local use values in addition to supporting global exchange values. Outside of these projects with inherent integrated carbon development (i.e. people involved in stoves or monitoring), questions exist on whether markets or policy will prescribe local development attributes (i.e. mandatory MRV on social development) or the extent to which labels can determine, and communicate, social benefits. Although I have examined two projects under the Gold Standard, we can see that although the

projects certainly do have local development benefits, local political economies and technology types nuance outcomes, and that uneven development patterns are not conveyed fully in labelled 'ethical carbon'. Though employing a different theoretical and methodological analysis, this outcome supports others in that certain project types lend themselves for labels so the technology or project type is a key driver (Olsen 2007; Olsen and Fenhann 2008; Nussbaumer 2009; Drupp 2011). Labels can help provide information, but they do not unveil the commodity completely: there are still local nuances that need to be attended to.

However, there are obvious important caveats that need to be explored here. Firstly, these are market mechanisms that rely on the commodification of carbon so that they can reduce carbon. This is achieved in the mechanism (insofar that additionality and monitoring requirements are adhered to). We should not extrapolate so far as to criticize projects for not reaching achievements they did not promise in the first place – such as *equitable* development). Secondly, we have to consider what we want the carbon markets to achieve given the fact that most large emitters are buying non-Gold Standard carbon offset credits; how much time should we spend improving their certification and translation into a market which would effectively need to commodify sustainable development (and attend to the complex sovereignty rights and definitional multiplicities of this term) to value it fully? As a result perhaps there are administratively easier mechanisms to work on local sustainable development outcomes or policy prescriptions that can harness increased calls for MRV in climate finance to mutually support carbon reductions through active local participation. As Jessop notes: “much of what passes as market failure is actually an expression of the underlying contradictions of capitalism” (Jessop 1998: 39). We have to note that at a certain point, we will not be able to include the social relations accurately because costs of doing so would obviate the use of the market in the first place: i.e. use the spatial fix of offsets: buying cheap to sell more expensive.

If greater movements toward MRV are required, then perhaps the role of multiscale information on local processes and negotiations will provide the ability for buyers to 'see' what they are purchasing in terms of social relations in addition to carbon reductions. Pluralist approaches to creating projects would argue that broader, democratically engaged local social relations would provide a stronger and more sustainable platform for the development of carbon reduction projects (and policies), especially where the carbon reductions rely heavily on local participation.

We can attempt to defetishise the commodity, but if we want to 'bring the social back in' we need to construct the market according to the social benefits using the carbon commodity tools, and nuance these according to tendencies within certain project types. As Smith et al. (2002: 58) note, analysis “demands a move away from the focus on 'the commodity' per se and towards the mechanisms by which value in particular sectors of activity is governed by the networks of linkages which comprise the complexity of contemporary economic life.” We need to understand the carbon commodity but place it in context of the social and power relations that are embodied in its production.

Maybe the use of labels does begin to unveil the carbon commodity and that the exchange value can incorporate notions of the use value. But we must be careful not to create just another tick box output that does not take into consideration the true social relations that are at play (i.e. uneven local development) otherwise consuming *because* of the social relations is not actually advancing the betterment of the social relations in question. On the other hand we have to be realistic about what the market, and the use

of commodification for local development, can actually do given cost constraints and ultimate objectives. Although laudable, we must also examine broader structural inequities and understand alternatives for development that include better governance and national-local relations. We shouldn't push the markets to do more than they are intended to do, but we also should not rely on trickle down without specific policy prescriptions to bring the social back into the emerging green economy fostered by global carbon markets. Regulating for MRV and improved social analysis and participation may move somewhat towards this more equitable outcome by creating a level playing field of social benefits.

That there are ultimate barriers to the spread of market norms (O'Neill 2007: 45) and bringing back in the social dimension fundamentally may mean new forms of interaction between actors that require different constructions of what is valued in addition to the fostering and scalability of processes that take account of these political economic dimensions and power asymmetries. These are crucial questions for global-local linkages, scales of decision-making, claims for resources and power relations in future economies defined by emerging climate policy.

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