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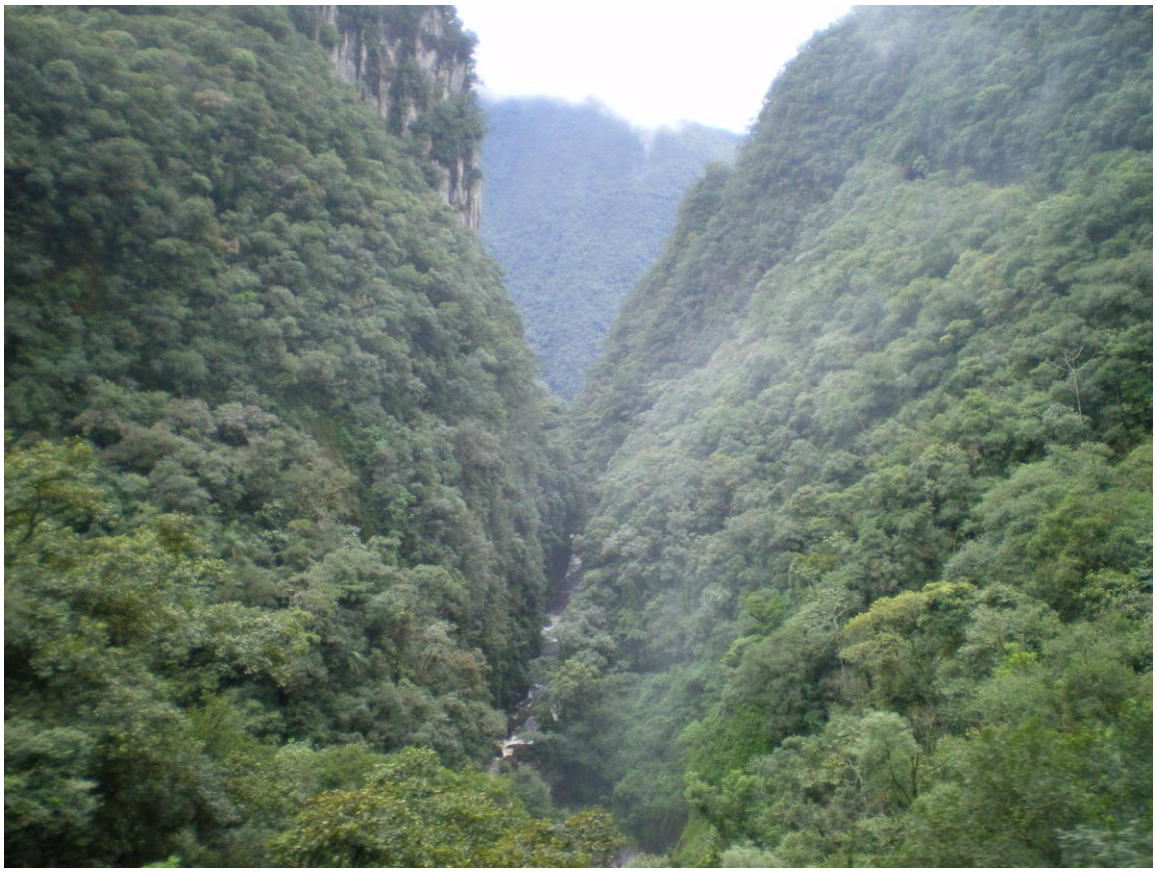

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Joy Murray, Manfred Lenzen and John Murray

Centre for Integrated Sustainability Analysis, School of Physics A28, The University of Sydney, NSW 2006, Australia

Forest carbon – own-able financial product or global common good?

With the debate linking greenhouse gases and climate change increasingly shifting from the science arena into policy and finance, a number of issues are emerging around carbon trading. Carbon sequestered in forests until recently was un-ownable. But who owns the carbon and who trades in what some are calling a new financial product, or a new form of money, are still highly contested questions. Allocation of ownership rights is hampering the transition of carbon from collectively owned ecosystem input to individually owned commodity. But should forest carbon become a financial product? This paper examines the issue of carbon sequestered in forests and the global mechanisms to exploit it. Some of the consequences of distinguishing the carbon from the tree and building a multi-million dollar enterprise around this distinction are discussed. Consequences include carbon crime and the rebound effect of wealth accumulating to the wealthy and spent on carbon intensive goods; and the possibility of funds flowing back into forest communities. It concludes with the divergent consequences of two alternatives for exploiting the world's forests.

Prologue

The concluding sentence of Jonathan Williams' book *Money – A History* presents a fundamental paradox: "how can something that has become so intangible be so very powerful?" (1997, p. 249). This intangibility refers to changes in the role of money caused by the explosion of credit during the Industrial Revolution. Manipulation of this intangible money/credit Williams suggests, had enormous consequences for the structure and nature of society. Although they concentrate on the development of modern money from metal to intangible credit they make the point that while the function of Western money was historically linked to a "particularly European concern for material productivity and profit … this is a far from universal human characteristic" (Williams, 1997, p. 213-4). They quote the example provided by anthropologist Mary Douglas who spent time in the 1950s with the Lele people of Zaïre who did not appear to have a market-based economy. Goods, she said, were distributed on the basis of status not by purchase. What may have been the equivalent of money was a cloth used to make non-commercial payments, for example to meet ceremonial and social obligations. Another example was attributed to Finow, Chief of the Tonga Islands, recorded by a mariner in the early nineteenth century, providing an Islander's view of Western money. He is reported to have said: "If money were made from iron and one could make knives, axes and chisels with it, then there could be some point in giving a value to it, but as it is I see no value in it. If a man has at his disposal more yams than he has need for, then he can exchange them for pigs or bark cloth. Of course money is easy to handle and is practical, but, as it does not rot, if it is preserved, people put it aside instead of sharing it with others (as a chief should do) and they become selfish." (Williams, 1997, p. 216-7).

Introduction

Now we have the possibility of a new form of money that is even less tangible than credit. As Millard-Ball and Ortolano point out (2009) an offset by definition does not exist in any tangible form, it "can neither be measured directly nor observed in reality, because it represents the absence of a certain quantity of emissions that would have been emitted under a counterfactual 'without-project' or baseline scenario". Nevertheless, in a paper prepared for the US Climate Task Force Joseph Mason (2009) argues that like

money, carbon contracts can be used "to store value for the future as a source of income" and just as "money is a necessary input to production" so too now is carbon. He goes on to say that "[T]he fundamental source of value for both carbon contracts and money lies in the necessity of their use as a production input by government fiat. Hence, it makes sense to think of carbon permit supply management in the same light as managing a fiat money supply." (Mason, 2009, p. 14). And just as Williams observed in the case of the role of credit during the Industrial Revolution, manipulation of the supply of this new intangible currency in a market-based carbon economy could have serious consequences for the structure and nature of society.

Until recently we may have assumed that carbon, sequestered in trees and indivisible from life itself, belonged to the world at large. However sequestered carbon can now be differentiated from wood to which it is intrinsic, and owned as a separate entity. Certificates representing this carbon can be banked, traded, used as a medium of exchange, passed on from person to person, exchanged for another currency or finally 'cashed in' and retired like other promissory notes. These certificates would seem to possess many of the attributes of a currency once based on precious metal. Such potential has opened up all kinds of prospecting. It has brought about new laws. It has initiated a carbon rush that may see some people gain fortunes at the expense of those who would previously have thought it ludicrous that private wealth could be created out of such a fundamental part of life. This new currency seems destined to operate in a market-based carbon economy where who becomes wealthy may depend on who gets to issue the notes and who gets to trade in them. Already capital cities around the world are vying to become carbon market hubs with all the attributes of financial hubs including futures trading, derivatives markets, auditing, brokering, assets management, registry and legal services[1]. However there are other voices advocating a different approach, one in which carbon sequestered in forests is not owned by individuals for trade purposes but is guarded collectively as the responsibility of the whole planet. This warrants a closer look at ownership of the bounty of nature and how a new form of money and its supporting

[1] http://www.environment.nsw.gov.au/climatechange/carbontradingfaqs.htm

infrastructure have developed to this point. Our focus is carbon sequestered in forests rather than the wider carbon trading arena.

Who owns the trees and who owns the carbon?

To examine the construct of carbon as a new form of money, the supply of which, as Mason suggests, needs to be managed in the same way as the supply of money, we need to look at who owns the natural wealth of the world's forests because in order to be tradeable, carbon needs to be ownable[2]. At a global level as habitat supporting biodiversity and necessary for the overall health of the planet, forests are watched over by the United Nations. However there exists no collective ownership, as there does for example, for the oceans of the world. Neither is the bounty of nature provided by forests owned by all nations, as are the fish of the High Seas. Nevertheless responsibility for conserving the world's forests seems to be viewed by the UN as the collective responsibility of all nations. The UN Secretary-General, Ban Ki-Moon wrote in the 2007 Environment Programme Annual Report that as "a family of nations we have overseen the destruction of many of our planetary life-support systems" and that combating climate change presented the world with, among other things, the "opportunity to combat forest loss" (UNEP, 2007, p.3).

At a national level, as a member of this family of nations, Australia like many developed countries owns all natural resources, including forests, on behalf of the people. Land clearing needs government approval and even removal of a tree in your backyard needs council approval. Seventy-four per cent of native forest is publicly owned (privately owned native forest includes Indigenous ownership). However, Australia's State and Territory Governments manage these natural resources by licensing provisions for access and distribution. About 70 per cent of Australia's forest is privately managed, and members of the forestry industry have legal rights to harvest on public land (Commonwealth of Australia, 2005). Many of these traditional forestry industries have taken to adopting climate change into their goal statements symbolically staking a claim

[2] The Australian Bankers' Association stresses the need for secure property rights as the basis of a tradeable instrument (i.e. a carbon asset) http://www.bankers.asn.au/Default.aspx?ArticleID=1158 (accessed 21/11/09)

to sequestered carbon (Flint 2007; Department of Agriculture Fisheries and Forestry 2008). In addition all Australian states now have legislation, either new or adapted, to recognise sequestered carbon as something that can be produced and owned. Hence it is now regarded as a property right that can be bought and sold separate from the tree. According to Hepburn (2009) this legislation has led the world in effectively creating, and assigning ownership to, a commodity – carbon – that did not previously exist (Australian Greenhouse Office, 2005).

In some countries, particularly developing countries, ownership of forests is customary rather than legislated. According to the Forest Peoples Program, which supports forest people's rights, nearly all of the world's forests are inhabited (FPP, 2008). Many of the peoples with customary rights to the forests have developed ways of life that depend on their environments. Yet customary rights are in some cases giving way to proprietary rights as cash-strapped governments that claim ownership of their country's forests sell this natural wealth (Covington, 2009) often at bargain prices, to some of the world's richest individuals (Vidal, 2008; Oliver, 2008). And although buyers may express a commitment to conserving habitats they may soon be competing with governments for ownership of the carbon stored in these forests. Meanwhile Indigenous forest dwellers view the process of selling off the forests to outsiders as another kind of colonialism and the involvement of their governments as sponsored displacement from what was traditionally theirs. This is understandable, considering press reports of the violent repression in the Peruvian Amazon earlier this year following Indigenous people's protests over government decrees that permitted invasion of their territories (Leon & Kraul, 2009; Gibler, 2009).

These ownership tensions are bound to continue as global pressure to conserve the world's forests as a means of combating climate change meets local politics and cultural norms. Yet despite the problems carbon trading is already established and growing.

Current trading in carbon credits from forest sequestration and some of the consequences

While most of the activity in carbon credits from forestry projects – either tree planting or conserving existing forests – is still outside of international agreements, small-scale projects are possible within the Kyoto Protocol (UN, 1997). The Kyoto Protocol's Clean Development Mechanism (CDM), which enables developing countries to generate carbon credits for purchase by developed nations, has provision for small-scale afforestation and reforestation projects. Local communities wishing to deal in carbon offsets must do so through their National Authority set up to handle CDM offsets (UNFCCC, 2008). However access to this carbon market depends on well-defined property rights, which may not exist. In Mexico for example, communal property rights and lack of a transparent land tenure legal framework have inhibited investment in CDM forestry projects for example from General Motors and American Electric Power. This may account for the fact that as of August 2009 only six such CDM projects had UN approval (UNFCCC, 2009).

While developing countries negotiate over ownership of forests, with an eye to ownership of carbon, there are bodies around the world that have addressed carbon ownership issues and initiated projects outside of the Kyoto framework. In Australia carbon sink forests attract a tax break and carbon offsets from forestry projects can be traded on the voluntary market or, until a national carbon trading scheme is in place, through the Federal Governments Greenhouse Friendly™ Program (AGO, 2005). Carbon sequestration can be generated by industries, just like a product, and can be owned, traded and used for offsetting. There are now companies such as *CO_2 Australia* (2009) whose stated purpose is the removal of CO_2 through forestry projects. For example *CO_2 Australia* pays landholders to plant trees. In return the company holds so-called Carbon Sequestration Rights. A tree-belt Forestry Right is endorsed on the affected certificate(s) of title so that even if the land changes hand the commitment will continue. In New South Wales, where common law has been adapted to accommodate ownership of carbon, a Forestry Right is a form of *profit-à-prendre* (NSW Dept of Lands, 2007). That is, right to the produce of another's land, in this case the legal right to claim the sequestered carbon.

The trees provide the company with auditable carbon credits, which can be used to offset emissions in Australia.

Then there is the voluntary carbon market populated by entrepreneurs in numerous online shop fronts for tree planting projects like those criticised by James Lovelock below. You can buy certificates online to say you've planted trees you can give them as presents or use them to offset your baby or your car or your flight. Some of these online shops are run by not for profit organizations, many are retail businesses. Some adhere to strict standards, for others it would be hard to know if and where trees were being planted or how they were being maintained (Murray & Dey 2008).

There are also private organizations concerned with the prevention of forest destruction. Take for example the British charity *Cool Earth* (2009) with its own scheme for Reduced Emissions from Deforestation and forest Degradation (known as REDD). Its business is 'keeping carbon where it belongs' by selling protection of Amazon rainforest for £100 per acre. Its website says that it is working in collaboration with 'local partners' Ecotribal and through them with the Ashaninka chiefs of the Peruvian rainforests who 'have offered their land for sponsorship through *Cool Earth'* (2009a). *Cool Earth*'s homepage boasts James Lovelock saying, "Carbon offsetting? It's just a joke. To pay money to plant trees, to think you're off setting the carbon? You're probably making matters worse. You're far better off giving to the charity *Cool Earth*." However *Cool Earth*'s British based partner Ecotribal, in partnership with Treeflights (2009) offers corporate and individual carbon offsets from Amazonian forest tree planting projects. *Cool Earth*'s other on-the-ground partner, Fauna and Flora International (2009) according to their website has "teamed up with Australian investment bank Macquarie, to form a groundbreaking task force to invest in the management of tropical [Peruvian] forests and generate carbon credits for sale" (Macquarie Group, 2009). Negotiating with Indigenous forest dwellers on sponsorship paid for by donors to *Cool Earth* for forest protection on the one hand and negotiating with whomever for forest carbon credits to sell to corporate and individual buyers on the other may raise conflict of interest issues for these 'on the ground' partners. It may also raise questions about double dipping. Is the carbon that we,

as sponsors, have locked away in paying for our acre of forest to be protected, the same carbon as that potentially offered for protection by the government to the World Bank or that sold to a Treeflights' customer as a credit? It's not likely to be, but how would we know. Such details are difficult and time consuming to track down through numerous websites.

A more serious consequence of carbon trading, albeit on the back of fledgling international schemes to reduce emissions from the destruction of forests, rather than the piecemeal voluntary market, is the eco-crime syndicate. Peter Younger from Interpol recently warned environmental conference delegates in Bali of fraudulent trading in carbon credits (Interpol, 2009). He said that the Reduced Emissions from Deforestation and forest Degradation (REDD) scheme will unlock billions of dollars from developing countries that conserve or restore their forests (Creagh, 2009). This, he says, will inevitably lead to the involvement of organised crime, with bribery and intimidation of officials and violence against Indigenous people. Papua New Guinea has recently been awarded over $US2.5m for its REDD program (UNDP, 2009). At the same time Reuters has reported a multi-million-dollar offer of assistance from carbon brokers to a government agency in Papua New Guinea and doubt over the validity of the offset projects on offer (Wynn & Greagh, 2009). Along with Gridneff's (2009) story in the press of carbon conmen attempting to sell fake trading deals to PNG villagers, a claim supported by the independent REDD-Monitor (Lang, 2009) and alluded to by the PNG Office of Climate Change and Environmental Sustainability[3] it seems the threat of crime may already be a reality.

Different approaches to managing forest carbon

It's too late to leave carbon undifferentiated in the trees, it's already out there. Many already see it as a potentially lucrative part of the total carbon finance sector, which according to one analyst already includes 90 hedge funds, 80 private equity funds and

[3] http://climatepng.org/index.php?option=com_content&view=article&id=4:occes-clarifies-media-issues&catid=6:press-releases&Itemid=2 (accessed 21/11/09)

many venture capitalists and is 'the most complex financial market ever created' (Mason, 2009, p. 6), with trade worth US$30 billion on the European market alone in 2006[4].

However some view forest carbon as a separate case, different from other aspects of carbon trading, such as credits from green energy projects, because ownership is not clear cut and those with the potential to profit through sophisticated market transactions are probably not those who claim traditional ownership of the forests. The market-based approach referred to above, either at government or project level and either as part of global accounting or part of the voluntary market, leads directly to carbon as financial product to be managed on the global financial/carbon market. The other is based on human rights and social concerns and offers an alternative to what Williams (1997) refers to as a "particularly European concern for material productivity and profit" noted above. The tension between these two approaches has led to considerable distrust.

A market approach to REDD

Reduced emissions from deforestation and forest degradation (REDD) is the anticipated outcome of the Forest Carbon Partnership Facility (FCPF, 2008) to which Australia is a contributor. The FCPF, launched by the World Bank during the 2007 Bali climate change meeting, was to address deforestation and forest degradation. It provides funding for governments to ready themselves for carbon trading. Readiness includes improvements to forest law enforcement and land tenure structures as well as defining who owns the carbon credits. According to the World Bank's website two mechanisms have been established to support FCPF (World Bank, 2009). One is the Readiness Mechanism, helping 37 developing countries to estimate their forest carbon stocks and sources of forest emissions and to calculate the 'opportunity costs' of emissions reduction. The other is the Carbon Finance Mechanism, which will provide funding to pilot incentive programs for REDD. A parallel initiative is the UN REDD program (UN-REDD, 2009). Its website identifies nine pilot countries, including PNG and Indonesia, that together

4 http://74.125.153.132/search?q=cache:m2QNJ0Mrt1wJ:www.unep.ch/etb/events/IPES%2520presentations/10%2520-%2520GChichilnisky_International%2520Bank%2520for%2520Environmental%2520Settlements.pdf+value+of+assets+traded+on+global+carbon+market&cd=4&hl=en&ct=clnk&gl=au&client=firefox-a (accessed 21/11/09)

have been awarded US$18m out of a total UN-REDD fund of around US$52.2m. The UN is hoping that a functioning international REDD finance mechanism will become part of an agreed post-2012 global climate change framework (UNDP, 2009a).

However the Forest Peoples Programme (FFP, 2008) is distrustful of the ability of the World Bank's facility to negotiate Indigenous forest dwellers' legal rights to tenure of their forests. A major complaint of the Forest Peoples Programme is that "the draft FCPF charter references only the rights of carbon buyers and sellers and not human rights" (FPP, 2007). Even though one of the Forest Carbon Partnership Facility's principles is to ensure countries will consider forest dwellers in policy-making, the REDD scheme has been challenged by the Forest Peoples Programme for lack of consultation. A 2007 statement (FPP, 2007) made by non-government organisations about the FCPF worries that "the eligibility and readiness criteria do not feature good governance aspects nor do they require demonstrated compliance with social and environmental standards and respect for the rights of forest-dependent and other affected communities". The statement also points out that "[T]he emphasis on carbon trading risks giving precedence to the delivery of emissions reductions over and above the vital social, environmental and poverty-reduction benefits of forest protection". It calls for "guarantees that inclusion of forest lands in REDD activities and compensation will not diminish the legal or customary rights of other users or owners, without … informed consent**".** It also seeks assurances that there will no "allocation of REDD payments or related subsidies to industrial-scale logging operators and agro-industrial companies". The need for this final statement illustrates how deep is the lack of trust.

The Forest Peoples Programme's concerns seem justified in light of a 2009 investigation by the UN Committee on the Elimination of Racial Discrimination. The committee strongly criticised Indonesia's draft REDD regulations (Indonesia has been awarded over $US5.5m for its UN-REDD program). The Committee requested that they be "amended to ensure they were consistent with the rights of Indigenous peoples to own and control their traditionally owned territories and to consent to activities, such as REDD, that may affect them" (FPP, 2009a p.2; UNHCHR, 2009). In May, 2009 the Indonesian Ministry

of Forestry signed a regulation on REDD that introduced the world's first national legal regime for REDD implementation. Perhaps in sensitivity to the above criticism the Indonesian Government's entitlement to REDD credits will be addressed in a separate regulation, leaving undecided at this stage the percentage of revenue that will flow through to traditional owners. However the regulation supports a market-based approach to forest protection. Indonesia expects to trade REDD credits under any post-2012 international trading framework "for the purpose of implementing developed country commitments to reduce greenhouse gas emissions" (Covington, Baker & McKenzie, 2009, p. 15). It has also made possible the sale of credits on the voluntary market from pre-2012 pilot projects. Some of these voluntary REDD projects have been supported by a $30m commitment from Australia. Australia is actively advocating the inclusion of REDD in a post-2012 carbon trading world and is keen to use REDD credits in its domestic trading scheme (Wong, 2009).

Like Indonesia, Guyana supports a market approach to reducing emissions from the destruction of forests. Again the Forest Peoples Programme has expressed concern over ownership issues. This is because Guyana has offered large areas of forest as a world carbon store in return for payment under the REDD scheme despite the fact that Indigenous peoples own a large area of the country's forest under domestic law and are asserting rights to almost three times as much based on traditional use and occupancy (FPP, 2009a). Of concern is that Guyana has no legal framework for separating the rights to carbon from forest rights, which leaves open the potential for competing claims from government and Indigenous people (Covington, Baker & McKenzie, 2009). However in his launch of Guyana's Low Carbon Development Strategy the President of the Republic of Guyana acknowledged the rights of the Amerindians and their jurisdiction over the forests in their titled land (Republic of Guyana, 2009). He said that the proposal to place Guyana's forest under long-term protection did not include lands under Amerindian jurisdiction. However, they could be included if communities decided to participate. He expressed the hope that a revenue sharing strategy could be devised that saw some of the earnings from REDD flowing directly back to communities and some into an Amerindian Development Fund. The fund would be used to expand social services including health

and education as well as provisions for low-carbon energy and forest-friendly economic activities. Guyana is being supported by the World Bank's FCPF and the Norwegian Government in its efforts to develop the technological and methodological capability to monitor and verify REDD activities (Herold, 2009).

A non-market approach to REDD

Brazil on the other hand has taken a non-market approach to REDD. According to a report written in May this year for The Terrestrial Carbon Group and UN-REDD and strongly supported on the COP15 Copenhagen[5] website in July, the Brazilian government believes that "any forest and climate regime should be voluntary and must not be used to offset emissions in developed countries" (Covington, Baker & McKenzie, 2009, p. 17). The measures taken in Brazil to control deforestation include: valuation of forest to conserve biodiversity, decentralized management and partnerships between all levels of government and the establishment of a legal framework for public forest management. The national plan aims to cut deforestation by 70% over the next ten years, and the government has recently announced a reduction by 45% between August 2008 and July 2009 compared to the previous year[6]. To assist in implementation Brazil has established The Amazon Fund supported by voluntary contributions from foreign governments (including US$100m from Norway) and the private sector. The Amazon Fund is managed by the Brazilian Development Bank with steering committee representation from all levels of government, indigenous peoples and civil society. At a state level, the Government of Amazonas has created a climate fund to pay for environmental products and services including those provided by forest peoples in preserving their environment and reducing deforestation[7]. According to the Bank Information Centre (BIC), a non-profit, non-governmental organization that partners with civil society in developing countries to influence the World Bank and other global financial institutions, grass roots organizations in Brazil strongly support the rejection of REDD as a carbon market-based

[5] http://en.cop15.dk/news/view+news?year=2009&month=10&newsid=1666 (accessed 21/11/09)
[6] http://www.bicusa.org/en/Article.11636.aspx (accessed 21/11/09)
[7] Amazonas also hosts the Juma Reserve REDD Project, which unlike the publicly funded state projects, will rely entirely on the marketing of credits for its funding.

mechanism[8]. An open letter dated October 15, 2009 from participants at a BIC two-day meeting of socio-environmental organizations in Belém, Pará State, rejected the "use of market-based mechanisms as tools to reduce carbon emissions based on the firm conviction that the market cannot be expected to take responsibility for life on the planet." The letter went on to lament that "the expansion of a global CO2 market is legitimized as a new form of financial capital investment and a means to ensure the survival of a failed production and consumption model." Like the Brazilian government these grass-roots socio-environmental organizations totally reject the use of REDD to offset the emissions from 'Northern countries'.

Monitoring changes in land cover

To assist capability for monitoring REDD projects, market or non-market, the UN supports the development and sharing of satellite imagery to track changes in land cover over time. The UNEP's Vital Forest Graphics program estimates deforestation at above 13 million hectares a year and discusses the consequences in terms of people's livelihoods and loss of biodiversity as well as increased carbon emissions (UNEP, 2009). Ban Ki-moon talks about 'our planetary life-support systems' and combating climate change as the 'opportunity to combat forest loss'. Australia's role in sharing tracking technology was announced by the Minister for Climate Change and Water, Senator Penny Wong after the Bali Climate Change meeting in 2007 (Commonwealth of Australia, 2008). It was as a partnership with the Clinton Climate Initiative which, according to the Clinton Foundation (2009) website aims to address the "reduction of deforestation and the adoption of better land use practices [that] could lower global emissions by up to 30 percent." The Clinton Climate Initiative's Forestry program is creating a measurement system along with projects in partner countries to sustain tropical forests and their local communities. Its goal is "to protect and manage forests to mitigate climate change, and to make this be viable economically for national governments and local communities[9]."

[8] http://www.bicusa.org/EN/Article.11555.aspx (accessed 21/11/09)
[9] http://www.clintonfoundation.org/what-we-do/clinton-climate-initiative/our-approach/forests/ (22/11/09)

The Australian government's Department of Climate Change website has a somewhat different emphasis on the purpose of this technology. It says that: "[T]he overall aim is to demonstrate that this technology can be deployed on a global scale and in a manner that links sustainable forests with carbon trading markets". In announcing Australia's partnership the Minister said that is was to develop a global carbon monitoring system, the purpose of which was to assist in recognising sustainable forest management and reforestation within global carbon markets (Commonwealth of Australia, 2008; 2008a).

These two different emphases, one on livelihoods, biodiversity and local communities as well as lowering emissions and the other predominantly on carbon markets probably epitomise the major differences in the discourses surrounding carbon trading and the valuing of ecosystem services.

Valuing carbon as financial product or common good

Carbon monitoring for carbon markets is quite different from protecting habitat and minding the health of the planet. Accounting for changes in land cover, regarded as part of our planet's life support system, has become accounting for carbon, which implies ownership of carbon for trade purposes – carbon as a commodity, rather than as a building block of life provided by nature; carbon storage as a service that can be traded and is somehow attributable to human ingenuity, rather than as an ecosystem service attributable to nature and concerning all of us as custodians of the planet. The natural wealth of forests, has now gained an added dimension, this new value created elsewhere – in legislative chambers and global financial institutions – far from the day-to-day lives of the forests' customary owners.

The global financial system is now a familiar construct and may seem the obvious model for the carbon market but as Mason (2009) notes after hundreds of years of banking we can still have a global credit crisis; applying this knowledge – or lack thereof – to a completely new financial/carbon system, one that is considered to be more complex than the money market, may well have unintended consequences. Who foresaw the cascading effects of subprime loans throughout the global economy? And within this global

catastrophe it is easy to forget that the consequence for householders was also catastrophic. Had the local bank been the mortgagee things may have turned out differently, terms perhaps could have been renegotiated. However mortgages were pooled and shares in the payments received from borrowers were sold to investors – a practice known as securitisation and referred to by some as a giant Ponzi scheme (Krugman, 2009). One of the dangers of applying the financial market's current tools to forestry carbon markets is this divesting of responsibility with distance between source and the holder of a financial product – household and shareholder or forest dweller and carbon credit holder. Forestry credits usually are conditional on the trees remaining in situ for anything up to a hundred years. If they burn down or die from disease or neglect they must be replaced. In a free-market approach to carbon sequestration who will take responsibility for tracking the origins of specific credits and replacing lost trees?

In his 2009 Reith lecture *Markets and Morals* on building a new politics of the common good, Professor Michael Sandel warns of the consequences when norms are shifted (Sandel, 2009). He points out the dangers of making something that is commonly held to be a 'good thing', violation of which would make us feel guilty, into something for which we can pay. He asks 'should governments set limits on emissions and fine companies that exceed them? Or should governments create tradeable pollution permits?' The latter path makes carbon permits, as Mason (2009) points out, simply an input to production, one that can be bought by the carbon-dependant developed world from the developing world. His concern, like that of Brazil, is that those who are able to pay will be able to buy themselves out of any responsibility for reducing emissions. Survival International (2009) has pointed out that if the world really wanted to protect rain forests it could just leave them alone and let the people who have protected them for centuries continue their work. In turning one of the bounties of nature – sequestered carbon – into a product, and taking care of it into a business transaction we are in danger of distorting the value of this ecosystem service so that we no longer need to remember why the product was created in the first place. Ban Ki-moon's expectation of a combined will to protect our planetary life-support system may give way to a business cost. Sandel's conclusion is that some of

the good things in life are corrupted or degraded once they can be bought; that we need to decide how to value nature's goods and services. This is supported by the work of Gowdy and McDaniel (1995) in addressing the conflict between biodiversity and economics when, almost fifteen years ago, they pointed out that allocating property rights to environmental goods and services severely restricts the number of voices that can be heard in making decisions about the value and use of these goods and services, thereby limiting debate.

The Indigenous Peoples' Global Summit on Climate Change in Anchorage (2009) held its own debate on the valuing of nature. The summit issued a Declaration to "challenge States to abandon false solutions to climate change that negatively impact Indigenous Peoples' rights, lands, air, oceans, forests, territories and waters. These include… market based mechanisms such as carbon trading … and forest offsets." Davi Kopenawa, traditional leader from the northern Amazon, expressed similar views in London when he lamented that Western civilisations have no appreciation of the intrinsic value of the land as something sacred, the "error of the whites is to take the riches of the land" he told the Guardian in June (2009). The mainstream carbon trading debate, with its emphasis on ownership of the forests' carbon riches has all but consigned these voices to the margins.

Conclusion

It may be too late to leave the trees alone as Survival International suggest. Carbon has already been distinguished from forest and provided with certificates to represent it. Thus it may also be too late to avoid carbon credits becoming a new kind of global money supply with all that the financial analogy entails. But who can issue and who owns this new money is a question that is likely to occupy us for some time. At the moment there are two distinct carbon trading systems developing. One is the voluntary system working outside of Kyoto targets and UN projects, trading carbon credits in a profit or not-for-profit framework. The other is the UN system operating within a global framework of emissions targets. Much of the forestry activity in the latter system is aimed at assisting developing nations create offsets for purchase by developed nations to meet their obligations. Within each system there are afforestation/reforestation projects as well as REDD. Both offer opportunities to work with communities and for funds to flow to those who need them to support local work and infrastructure, particularly health and education.

Both also offer the potential to manipulate this new intangible money/credit with the possibility of unwelcome consequences for the structure and nature of society. Carbon credits can become just another business input (and market opportunity for those who want to speculate and trade) and as Sandel warns us, such a move can allow us to wash our hands of responsibility. While businesses buy, sell and speculate on the carbon market the origin of that carbon-currency and the eco-system service that gave rise to it can become less and less tangible. There is money to be made but the complexity of the market almost guarantees that much of it will find its way into already powerful hands. This may be good for the jobs that trading supports and good for enabling developed nations to discharge reduction obligations. However in such a scenario those who trade in credits could easily lose sight of the intrinsic value of the forest and the invaluable ecosystem services that it provides for humanity. Governments of developed nations and businesses engaged in offering compliance and hedging services for example could again be accused of only wanting to take the riches for their own narrow (carbon trading, target reaching) purposes. This could leave Indigenous forest dwellers with little benefit from

protecting the carbon stored in their forests. Like past resource booms in underdeveloped countries there is a danger, discussed by Paul Collier (2007) in his book *The Bottom Billion*, that the peoples of the resource-rich (in this case forested) countries remain poor while others make their fortunes

Wherever there's money there are consequences, as there were in the Industrial Revolution, from the making and the spending of that money. The emissions created in developing and maintaining a global carbon-trading infrastructure will cancel out at least some of the carbon reductions that constituted a reason for developing the infrastructure in the first place. Dealing in the abstract and tradeable construct of carbon credits has the potential to see wealth created far from the forests that gave rise to the credits. Losing sight of the original purpose of all this activity makes it easier for the already wealthy to spend surplus income on emissions intensive goods and services, thereby adding to the problem. However where wealth flows back to local communities either via governments or directly through local trading projects spin off benefits may be quite different. They may help redress the balance of living standards between the developed and developing world – something that needs to be done to demonstrate that the developed nations take a major share of responsibility for the plight of the planet. Raising living standards requires education and work opportunities for all members of communities, things that research has demonstrated contribute towards reducing the earth's growing population – another spin off benefit for the planet.

Brazil, with Norway's support, has shown that there is an alternative to carbon trading, or at least another approach that can be adopted as well as carbon trading. Responsibility for the protection of the world's forests can be undertaken outside of market mechanisms. Governments and organizations can share responsibility because it is good for the planet. Funding from those governments and organizations can be used to provide education, health, technological infrastructure and work for local communities including Indigenous forest dwellers.

Non market-based and market-based solutions lead in two different directions. One leads to satellites to watch over our planet's life-support system, which has intrinsic value and priceless worth. It leads to collective responsibility for the carbon stored in our world's forests with all countries playing their part in protecting it; and local communities benefiting through the building of vital community infrastructure of health care and education to enable them to continue as custodians while enjoying the services that the rest of the world now thinks essential. This is particularly important because environmental sustainability cannot be separated from social sustainability. As the UK publication *Securing the Future: Delivering UK Sustainable Development* states: "We have created a relatively good quality of life in this country for most of us but we now realise that this may have been at the expense of communities elsewhere in the world. Rich and poor worlds cannot co-exist without dramatic consequences." (HM Government, 2005, p.140). The developed world paying its dues for climate change could help bring about a more equal distribution of the benefits of the world's riches. No doubt this will sometimes involve the international community working with governments to bring about more open and transparent systems to ensure that funding flows back to where it is needed, however this would constitute another positive spin off for the world.

The other direction leads to satellite systems to monitor carbon for global markets and business transactions to deal with carbon sequestration, which is valued according to market forces and of marketable worth to those who own it. This may or may not lead to more equitable access to a good quality of life. It is possible however that it could lead to further accumulation of wealth in the hands of the already wealthy with an unintended spin off of more money to spend on goods and services the production of which causes further emissions.

Epilogue

On the back of money we've over fished and over farmed, over populated and irrevocably altered eco-systems in pursuit of 'material productivity and profit'. However as Gowdy reminds us, sooner or later "the expansion of human-created economic systems will be constrained by biological laws because the human economic enterprise cannot exceed the limits that all biological systems obey". Money has allowed economic growth – but it has become so intangible that we've lost the notion of what that 'growth' is founded on, forgotten that the world's resources are finite. The arrival of carbon, in effect as a new currency, can lead to the accumulation of newly created wealth possibly in the hands of the already powerful – to be spent on more goods and services. But, as Williams (1997) and his colleagues point out, this concern with productivity and profit is "a far from universal characteristic". Placing a value on carbon could lead us to cooperatively contributing to the conservation and restoration of native forests in developing countries thereby ensuring the sequestration of carbon but with the added benefit of providing a fairer distribution of the world's riches accounted for by acknowledging, rather than obscuring their origins.

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