



REDD+ and carbon markets: Ten Myths Exploded



Barking up the wrong tree; plenty of carbon, but it doesn't need to be traded.

Image: Greenpeace

Over the last four years, the United Nations' negotiations on Reducing Emissions from Deforestation and Forest Degradation – REDD+ – has become increasingly central in global discussions on climate change. Unfortunately there are still a number of serious misconceptions about the suitability of carbon markets to finance forest protection. The aim of this paper is to demonstrate why these assumptions are false or misleading.¹

In February 2011, the Secretariat of the UNFCCC invited parties and accredited observer organisations to submit their views on how market-based mechanisms might promote mitigation actions and enhance their cost-effectiveness.² They were also asked to comment on issues such as 'safeguarding environmental integrity', 'ensuring a net decrease and/or avoidance of global greenhouse gas (GHG) emissions', and 'ensuring good governance and robust market functioning and regulation'.³

Many of the resulting submissions in support of carbon trading as an appropriate tool for financing forest protection rely on outdated or false assumptions. They also fail to address the additional criteria that the UNFCCC requested.⁴ Below we examine some of the common arguments in favour of forest carbon trading, and challenge the assumption that it is a useful and cost-effective way of mitigating climate change.

Myth no. 1: ‘REDD+ represents a low-cost abatement option, enabling greater and faster emissions cuts than could be achieved for the same total costs with fossil fuel reductions alone. This is essential for stabilising GHG concentrations at the scale and speed necessary to avoid the most catastrophic effects of climate change.’

REDD+ as an offset mechanism does not reduce emissions, it merely moves them from one place to another.⁵ Therefore it cannot help stabilise greenhouse gas (GHG) concentrations on the scale or at the speed necessary to prevent runaway climate change. REDD+ can only contribute towards combating climate change if it is not financed through offsets.

Even if it were possible to measure emissions and reductions accurately enough to allow for compliance-grade trading, the costs of producing such compliance-grade forest carbon credits for trading are still unknown, and are almost certain to be much higher than currently assumed. The belief that REDD+ is a ‘low-cost abatement option’ seems to be based largely on the opportunity cost methodology and the ‘abatement cost curves’ produced by the global management consultants McKinsey and Company: but even McKinsey now recognise that the opportunity cost methodology gives a flawed picture of the real costs of implementing REDD+ (see Myth no. 2 below).⁶ For example, the costs of monitoring and measuring carbon rise exponentially with increasing accuracy requirements, and it is apparent that the process of counting carbon is already the dominant cost factor in much project development.⁷

Furthermore, existing ‘avoided deforestation’ project calculations frequently use default figures rather than direct measurement over time.⁸ Where on-site measurements are used to determine carbon content in a project area, accuracy has regularly been compromised in order to make carbon accounting affordable for the project’s proponents. The costs of ‘MRV-ing’⁹ forest carbon to the degree of accuracy required for carbon trading have not yet been reliably determined, but they are unlikely to fall below the current market price for carbon (around €13 per tonne) or even the historical high of around €30 per tonne.¹⁰

If we accept that REDD+ as an offset does not reduce emissions, but that it can reduce the cost of emissions abatement (i.e. that reducing emissions from deforestation costs less than reducing industrial emissions), this raises the question of who is receiving the benefits and who is bearing the costs of this ‘cost-effectiveness’. Allowing the largest polluters in the highest polluting countries to avoid reducing their emissions by purchasing cheap REDD+ offsets merely delays the changes to our energy infrastructure that are urgently needed. Offsets allow this short-term cost-management at the price of much higher costs in the long term, as genuine action on climate change is delayed.

Myth no. 2: ‘Estimates for the cost of cutting deforestation in half range from US \$12 billion to US \$35 billion per year. Raising this money will halve deforestation.’

The above figures are based on opportunity cost calculations, which utilise flawed economic assumptions and can grossly misrepresent the real costs. Opportunity cost estimates represent only one type of cost associated with REDD+ and do not take into account other costs such as transaction costs, implementation costs and institutional costs.

Opportunity costs are based on the projected financial benefits that a landowner would forego by not destroying or degrading forests. Therefore the opportunity cost of not converting forests to agriculture varies a great deal between different land uses. Subsistence uses do not generally yield a quantified economic value, so the calculated opportunity cost of stopping ‘slash and burn’ agriculture is very low, while the opportunity cost of paying a concession-holder not to convert to palm oil would be at least US \$2,000 a hectare. If the implementation of REDD+ is based on opportunity costs, therefore, the poorest forest users are likely to be targeted disproportionately. However, the actual cost of stopping subsistence farmers from using forest land (such as by improving their farming techniques, finding them alternative livelihoods, or relocating them) is likely to be much higher in reality than the simple (very low) opportunity cost of their land use suggests. If subsistence users are incorrectly identified as primary agents of deforestation, then focusing efforts on alternative livelihoods will also fail to slow or halt forest destruction.



The opportunity cost approach tends to take a 'one size fits all' approach to avoiding deforestation, through incentives or payments to landholders, and does not address the question of whether all stipulated opportunity costs should be considered for compensation equally. It overlooks the interaction of different policy levers to achieve the goal of reducing deforestation.¹¹ In order to have a complementary policy mix, one needs to consider 'imperatives' (laws and regulations) and 'capacities' (the ability to enforce them and provide good forest governance), in addition to simple 'incentives' (REDD+ payments).¹²

Myth no. 3: 'Carbon trading finance can play an especially important role for REDD+ in the long term by contributing sustainable funding efficiently and on the scale required.'

Carbon trading was initially designed as an interim measure to aid transition to a 'low-carbon economy'. As a result the carbon market has a limited lifetime by design: as numerous commentators have observed, if the carbon market continues until mid-century, activities to mitigate climate change will have failed. The 'sustainability' of finance from carbon trading is thus structurally reliant on the failure to reduce emissions adequately in industrialised countries. Given the urgent need for action on climate change, industrialised countries must start focusing immediately on domestic emissions reductions.¹³

Decisions taken today can 'lock in' dirty technologies for the next half century (e.g. building new coal-fired power stations), so it is crucial that we begin investing now in the sort of energy infrastructure that will ensure the transition to a low-carbon economy.

The 2006 Stern Review considered carbon offsets to be a building-block to facilitate the transition to a low-carbon economy in the Global North, but it also recommended that they should be phased out in the medium term – defined by Stern as the period 2012–2020 - precisely the period when REDD+ offsets are likely to be phased in.¹⁴ Many of those involved in forest carbon admit that we are many years

away from perfecting either the technology for measuring forest carbon, or the capacity of governments in developing countries to engage in such a trading mechanism. This is incompatible with targets to phase out carbon offset markets by 2020, and to wind down carbon trading itself over the following decade as emissions reductions become more ambitious. Furthermore, forest carbon offsets are excluded from the EU's Emission Trading Scheme (EU ETS, by far the largest compliance market for carbon credits) until at least 2020: and there seems little prospect, in the foreseeable future, of the emergence of any major new compliance markets in which REDD+ credits could be traded in any volume. As for the long term, there will be no scope for offsetting or any form of carbon trading on the scale envisaged in REDD+'s carbon finance estimates, if we are to make emissions reductions in industrial countries in line with the science – 85 per cent cuts by 2050.¹⁵ This makes carbon trading unviable as a long-term finance option for REDD+.

Myth no. 4: 'Creating an economic value for standing forests will provide the necessary long-term economic incentives for effectively protecting tropical forests and reducing emissions from deforestation.'

Much support for REDD+ comes from those who believe that the momentum gained by including forests in the climate agreement will finally deliver the money needed for forest conservation. However, deforestation is a complex socio-political and economic problem which cannot be solved by cash alone. There are many cases where substantial international funds have been allocated to saving forests, but to no effect.¹⁶ What is needed is genuine political will to identify and implement effective action to halt deforestation and forest degradation: but currently most draft national REDD+ strategies have focused on the technical aspects of measuring forest carbon while ignoring the need for fundamental governance reforms.¹⁷ Unless the underlying drivers of deforestation are addressed, the threat to forests will continue.



In addition, forests already have a high value for many forest-dependent communities. They depend on forests for their livelihoods, and often their cultures are built around them. However, these uses are often not recognised officially, so the value of these forest uses is not considered in conventional economic calculations.

Myth no. 5: ‘REDD+ is particularly well positioned to benefit from the policy shift from “project” to “sector wide” trading, given the suitability of forestry as a sector-wide mitigation effort.’

The ‘relevant’ sectors for greenhouse gas reductions or avoided emissions under the Convention¹⁸ (Art. 4,1c) are described as energy, transport, industry, waste management, forestry and agriculture, and it is across these sectors that mitigation efforts are needed. All of these sectors are very different, and the policies and programmes needed for them to deliver GHG emissions reductions differ accordingly. The energy and industry sectors, for example, benefit from well-developed technologies and centralised/point emission sources. A 2008 report from the UK’s Carbon Trust, which examined the likelihood and preconditions for a global carbon market, found that the land use sector (forest and agriculture) is not amenable to carbon trading due to ‘perceived risks and high transaction costs in the face of measurement uncertainties and dispersed sources’.¹⁹ Sectors that are likely to deliver benefits only in the long term, or where the benefits are more uncertain (such as forestry projects or avoiding deforestation), are less competitive than others. This point is further evidenced by the failure of forestry projects to gain significant uptake in the Clean Development Mechanism (CDM).²⁰

Myth no. 6: ‘Significant work has already been undertaken on REDD+ methodologies to ensure quality by implementing rigorous measurement, reporting and verification requirements and determining reference levels which ensure additionality. As such, REDD+ is poised to be able to contribute rigorous, verifiable credits, fungible with emission reductions from other sources.’

The scientific data currently available on measuring carbon stocks and fluxes from land-based emissions are anything but rigorous and verifiable, and certainly do not match the level of accuracy needed for carbon to be traded on a compliance market. The use of default values in offset project calculations is widespread and estimates of carbon volumes stored in the various forest areas varies considerably.²¹ Error levels of 50 per cent or more are not uncommon,²² with 30–40 per cent being the average range of uncertainty reported from measuring land-use change emissions in EU countries.²³ The proposal that ‘uncertainties can be dealt with through conservative accounting’ is called into question in light of the scale of uncertainties that arise in forest carbon accounting.

Central to the concept of creating credits ‘fungible with emission reductions from other sources’ is the concept of additionality. This means that the activities to reduce deforestation would not have been undertaken without the prospect of payments through REDD+, meaning subsequent emission reductions would not have occurred without the added incentive, thereby justifying the distribution of tradable carbon credits.



In order to determine whether the actions were additional to what would have happened otherwise, a reference level must be set, to measure the reductions as a result of intervention against a 'business as usual' state. Economist Romain Pirard points out that the capacity to determine reference levels therefore determines the economic efficiency of the mechanism.²⁴ If it is not possible to determine if the intervention brought about the change from the reference scenario, then we cannot tell if the money would have been better spent elsewhere. Where reference levels are used to measure reductions in emissions against which carbon offset credits are issued, this also determines the environmental integrity of the mechanism: if the emissions reductions which created the offset were going to happen anyway, then overall emissions increase.

Reference scenarios can be determined on a historical basis or based on modelled projections to account for future variables. Analysts have pointed out that there are problems with both these categories.²⁵ It is not credible to extrapolate average deforestation rates from the past and to project them into the future. Predictive scenarios are also unreliable, as future rates of deforestation are influenced by many factors, many of which are impossible to predict, which is why most countries have rejected the idea of reference levels being based on projections.

By contrast, there are various credible approaches which can determine change against alternative baselines, such as improvements in policies related to governance or land tenure reform, designed to reduce deforestation, and detecting degradation through changes in forest landscapes such as fragmentation of previously undisturbed forest landscapes (detected through the incursion of roads or other indicators).²⁶ Countries which are thus deemed to have 'avoided' deforestation would be rewarded. However, this approach cannot be precise about the range of avoided emissions, and therefore cannot be used to quantify carbon emissions reductions over a given period, ruling out the possibility of tradable carbon credits. The exclusion of offsets also removes the risk of overall increases in global emissions if the reductions do turn out to be non-additional, a critical consideration given the severity of the climate crisis.

Myth no. 7: 'Concerns about the potential risk of REDD+ supply "flooding" the carbon market can be contained through policy and market design, including the adoption of strict long-term targets with "banking" and, if necessary, limits on the use of REDD+ and other types of credits.'

The Carbon Trust notes that 'the lack of any internationally accepted process to analyse the interaction of supply from the carbon trading mechanisms with the demand implied by future emission targets is the greatest single weakness in the current negotiating process'.²⁷ It is already clear that when the first compliance period of the Kyoto Protocol ends in December 2012, there will be a serious surplus of supply over demand. Therefore governments cannot rely on carbon trading to establish carbon prices that are sufficiently high to encourage transformational investment in low-carbon infrastructures, or to encourage steep emissions reductions, even without REDD+ offset credits becoming available.

Recent economic modelling has looked at ways of limiting the over-supply of REDD+ credits, e.g. via buffering, supplementarity limits and allowance banking. It has been found that there are difficulties in matching supply and demand so as to prevent a carbon price crash (through "flooding" the carbon market with REDD+ credits), while at the same time raising sufficient funding to have an impact on reducing rates of deforestation.²⁸ Although reducing the amount of REDD+ credits allowed into the carbon market might go some way to correcting the imbalances between supply and demand, it would also seriously restrict the ability of REDD+ to tackle deforestation, and would probably also significantly depress the price of REDD+ credits. New Carbon Finance concludes that even a liberal restriction on supply of REDD+ credits to 60 per cent would have a downward effect on overall carbon prices, and that the subsequent reduction in finance flows to forests would result in only an estimated 5 per cent decrease in deforestation rates by 2020.²⁹ Therefore stable financing for action to halt deforestation must come from sources other than trading in forest carbon offsets.



Similarly, allowance banking, which lets market participants artificially create scarcity by holding carbon credits in the hope of selling them when prices are higher, may result in emissions that exceed the established cap in any given year, defeating the objective of reducing global emissions.

The Carbon Trust concludes that ‘the ultimate value of [carbon markets] will depend entirely upon the strength of post-2012 commitments, and the extent to which these drive a demand that can absorb the likely supply’.³⁰ Given the extraordinarily weak emissions reductions targets in developed countries, forest carbon trading should not play any part in future financing.

Myth no. 8: ‘For the period 2010–2012, developed countries committed US\$4.5 billion for REDD+. The gap between this figure and the estimated annual financing needs for REDD+ is significant.’

A number of assumptions regarding the scale of the finances needed for REDD+ and the ability of forested countries to absorb this finance urgently need to be questioned if the REDD+ debate is to proceed on a more sensible footing. Figures of US \$12–35 billion a year for halving deforestation were largely based on opportunity cost figures, which many, including McKinsey who were strong proponents of this methodology, have more recently conceded to be unreliable.³¹ Analysis of the actual cost of those measures which have successfully reduced deforestation might well find that the amount of money needed is much closer to what is already on the table. Therefore the issue is not so much the ‘gap’, or how to address it, but how to use the available money effectively to fight deforestation.

The US \$4.5 billion currently pledged for reducing deforestation is proving very difficult to spend sensibly, with Norway’s bilateral deals in Guyana and Indonesia still stuck in preliminary discussions, and with non-disbursement in many other major funds for tackling deforestation. The World Bank’s Forest Carbon Partnership Facility has been characterised by participant countries struggling to draft national

REDD+ strategies which give due consideration to safeguards, the rights of forest dependent peoples and overall governance concerns.³² Unless governance factors in forested countries are addressed as a priority, throwing money at the problem will do little to solve it.³³ According to Rights and Resources Institute, government policy and investment is the greatest driver of deforestation.³⁴ What is urgently needed is the political will to promote development strategies not premised on deforestation.



Acid rain damaged trees at Clingman's Dome in the Great Smokey Mountains of the southeastern United States.

Image: David Mason



Myth no. 9: ‘The US acid rain programme is an example of how cap-and-trade and market mechanisms can work to achieve environmental goals at least cost.’

Those who point to the success of the acid rain market in the US generally overlook four key differences between the SOX–NOX trading scheme and carbon markets as currently existing or planned.

- The bulk of reductions in emissions were achieved before trading was introduced into the legislation.³⁵
- Achieving the emissions reduction goals merely required a technology change: the factories covered by the acid rain trading scheme still burn coal, but with the sulphur and nitrogen pollutants removed. They did not have to undergo a fundamental change in the energy source that drives the economy.
- While all existing and planned carbon trading schemes include offsets, the sulphur trading scheme did not allow for offsets. All other pollution trading schemes that have been piloted in the USA, and which included offsets, were a resounding failure.³⁶
- Trading was only introduced into the legislation once direct real-time measurement of the pollutant being regulated was possible and practical, resulting in a significant delay to the legislation. For most GHG emissions the technology is not available for such direct real-time measurement; and where it is, it is not widely used.

Lastly, the proposed carbon markets are not likely to behave like past emissions trading schemes. A new report from trading system experts the Munden Project³⁷ suggests that the carbon market will be far larger than the acid rain market; its sheer size will attract speculators, and the development of complex derivative products and mechanisms, making it hard to regulate, and setting the stage for a speculative bubble in carbon. Together with recent evidence of carbon fraud in the EU ETS, the world’s largest carbon market, this undermines the assumption that carbon trading will be a reliable source of finance for communities or project proponents. As the SOX–NOX market covered a much smaller universe of entities, it was not dominated by financial speculators (in most years, sulphur dioxide trading took

place mainly between related entities). Nor did it experience significant problems with market clearing or pose regulatory problems (with the notable exception of the Sholtz fraud case in California’s nitrous and sulphur dioxide trading programme).

Revisions in the regulation of financial markets in the wake of the recent global economic crisis pay little attention to how and whether new financial markets regulations will adequately address the particular risks of trading in a virtual commodity such as carbon. This is especially important when the government both determines the supply of the asset and is the regulator of the carbon market at the same time. Malpractice, fraud and outright theft of carbon permits from EU ETS registries, and the subsequent legal and regulatory turmoil that these incidents have caused, have exposed alarming weaknesses in the EU’s carbon trading architecture.³⁸ Existing and planned climate legislation setting up carbon trading schemes fails to recognise that financial markets have become vastly more complex and exotic since the early 1990s; and regulation of the financial markets has so far failed to address the particular risks arising from the carbon markets, which will be dominated by speculators and will dwarf the primary trading markets.

If carbon markets were to grow to the size anticipated by many, the speculative nature of the secondary carbon markets could create a carbon bubble and spur the development of subprime carbon. “Subprime” carbon credits are futures contracts to deliver carbon that carry a relatively high risk of not being fulfilled, and could collapse in value. Subprime carbon is most likely to come from offset projects, because sellers can make promises to deliver carbon credits before credits are issued for a project, or sometimes even before reductions in GHGs have been verified. A carbon bubble could also set the stage for the kind of financial innovation (e.g. complex securitised products) that might unwittingly spread subprime carbon through the broader marketplace. When the bubble bursts, the collapse in carbon prices would have destabilising consequences for compliance buyers (companies) and for the larger financial system.



Myth no. 10: ‘Concerns about additionality, non-permanence and leakage, which initially kept forests out of carbon markets, have been addressed.’

Credits for avoided deforestation do not qualify in all existing compliance-based emissions trading frameworks such as the EU ETS and the Kyoto Protocol. Key challenges include additionality, the impermanence of forest carbon sequestration (i.e. the possibility for reversals of carbon stored in trees and soil), international and intra-national emissions leakage, and uncertainties in carbon measurements. Despite claims to the contrary, these risks have not been addressed, seriously undermining the environmental integrity of REDD+.

It is very difficult to determine whether or not an action would have been taken otherwise (see Myth no. 6, above), especially because of the range of the socio-economic and political forces surrounding decisions about land use and land-use change, so it is extremely difficult to establish sound baselines.³⁹ In Costa Rica, for instance, many claim that national Payment for Ecosystem Services (PES) schemes, of which REDD+ is one, have had a modest effect, while others say that the impact is negligible. But the studies all agree that many landowners would have protected their forests anyway, and that the decline in deforestation in Costa Rica cannot be attributed to the payments.⁴⁰ The management consultants McKinsey and Co. have also acknowledged that additionality is a significant issue, affecting the cost of forest mitigation: ‘A payment for ecosystem services approach ... could have very high inefficiency, i.e. compensation is likely to go to some who would have not deforested in any case, increasing payment by a factor of between 2 times and 100 times.’⁴¹ Agricultural economist Alain Karsenty argues that it is not possible to set a baseline which avoids the risk of generating non-additional ‘hot air’ credits in the market and that there should be an international fund to pay for policy reforms which are likely to slow down deforestation rates but which cannot easily be quantified. This, of course, is something that the market cannot do.

It has also been argued that national implementation is a fundamental principle for avoiding leakage and achieving successful outcomes in the REDD+ process. The Council of the European Union has noted that: ‘Nationwide implementation involving the entire forestry sector would be required so as to minimise the risk of in-country leakage.’⁴³ Similarly, the Informal Working Group on Interim Finance for REDD+ (IWG-IFR) states that the programme must have global coverage and be nationally coherent (as opposed to project-based).⁴⁴ However, even with national accounting – which should theoretically account for intra-national leakage – international leakage effects could be in excess of 50 per cent.⁴⁵ This undermines any claim of environmental integrity, as demonstrated by the recent interest of international palm oil companies in moving to Africa, in response to the Indonesian moratorium on new palm oil plantations.⁴⁶

Forests are affected by human-induced activities (such as logging), natural disturbances (e.g. forest fires), and unpredictable changes in the carbon cycles of tropical forests resulting from climate change, as well as shifts in broader socio-economic policies (e.g. commodity price fluctuations). No REDD+ crediting mechanisms will be permanent, if the surging demand for wood and agricultural products is not reduced. Furthermore, trying to address leakage through a higher surrender ratio for forest offsets will merely allow buyers and sellers to ignore the complex challenges and risks associated with the possible reversals that are inherent in REDD+, and ultimately serves to generate cheap credits at the expense of environmental integrity. It could even encourage the development of shoddy credits, as unworthy projects would be credited at a predictable rate. It is widely predicted that with a temperature rise of no more than 2.2°C, the negative impact on tropical forests would be catastrophic, with the Amazon forests starting to disappear,⁴⁷ as well as increased risk of serious dieback from pests and disease. REDD+ if financed by carbon offsetting and hence carbon trading, would thus make matters even worse for the world’s forests and its climate.



Endnotes

1. Note that this paper has been motivated especially by the submission to UNFCCC made by the Amazon Environmental Research Institute (IPAM), Conservation International, Environmental Defense Fund, Natural Resources Defense Council, Rainforest Alliance, The Nature Conservancy, Union of Concerned Scientists, Wildlife Conservation Society and World Vision International in their paper 'Views on new market-based mechanisms: using markets for the full implementation of REDD+'. <http://unfccc.int/resource/docs/2011/smsn/ngo/223.pdf>
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13. UK Climate Change Committee: letter to Climate Change Secretary Chris Huhne, 9 September 2010. http://downloads.theccc.org.uk/s3.amazonaws.com/Renewables%20letter%20Sept2010/LetterDavidKennedy_ChrisHuhneMP_090910.pdf. In a letter to Climate Change Secretary Chris Huhne, CCC chairman Lord Adair said credits, which pay for action to cut carbon elsewhere in the world, should not be bought to cover UK emissions in the second budget, which runs from 2013 to 2017. The committee's chief executive David Kennedy said: 'Offset credits should not be relied on now to meet carbon budgets.' It is possible to meet these budgets at low cost and through domestic action alone. Even meeting these more stringent targets (of the second and third budgets) could be done without buying in offsets, the committee said.
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33. See footnote 15.
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For more information, please contact:

FERN
Kate Dooley
Brussels
www.fern.org
t +32 (0)2 894 4690
kate@fern.org

Greenpeace International
Michelle Medeiros
Amsterdam
www.greenpeace.org
t +31 (0) 20 7182000

Rainforest Foundation UK
Simon Counsell
London
www.rainforestfoundationuk.org
t +44 (0) 20 7485 0193

Friends of the Earth US
Kate Horner
Washington DC
www.foe.org
t +1 202-783-7400

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