

Comment on

**The McKinsey Report:
“Creating Incentives to Avoid Deforestation”***

With an Appendix on the Likelihood of Getting Funding for the LCDS

By

Thomas B. Singh

September 2009

Some Relevant Features of Guyana

The following are some features of Guyana that will prove relevant to the assessment of the Report:

- 76.7% —or about 15,104,000 hectares—of Guyana is forested. Of this, 61.7% —or roughly 9,314,000 hectares—is classified as primary forest, the most biodiverse form of forest. (<http://rainforests.mongabay.com/deforestation/2000/Guyana.htm>)
- Over the period 1990-2005, and indeed for a much longer time, the annual change in total forest cover was negligible, as was the annual change in primary forest cover.
- The carbon stock held in Guyana’s above-ground biomass was estimated in 2005 (FAO) to be 1,412 Mt. This represented 0.75% of the world’s total carbon stock trapped in above-ground biomass. By way of comparison, the corresponding estimates for Suriname, Brazil, the Russian Federation, the DRC and Australia were 4,008 Mt, 38,480 Mt, 25,787 Mt, 18,688 Mt, and 5824 Mt, respectively.
- Guyana’s population in 2002 was 751,223 and its population density was 3.9 people/km². The most optimistic projections place the population in 2025 at 837,511 (Bureau of Statistics, Guyana).
- GDP per capita in 2007 was US\$1,111 (Bureau of Statistics, Guyana). Total GDP was about US\$850 Million.

Summary of the Report

The paper attempts to estimate “*how much* will be required to stimulate substantial reductions in deforestation (pp. 3-4).” It is actually in the spirit of the “front running REDD proposal in the UNFCCC negotiations [i.e., the] ‘compensated reduction’ [proposal, according to] which developing countries could, on a voluntary basis, sell carbon credits gained by reducing deforestation rates against a baseline or ‘business as usual’ deforestation rate (Richards, 2008).” In Guyana’s case, payments for avoided deforestation will not however be funded by selling carbon credits in the carbon markets but rather by a special international fund (a Global Forest Fund) that will presumably be set up for this purpose.

* Office of the President, Republic of Guyana, December 2008

The idea is to pay money for environmental services such as carbon emission reduction rather than to give Kyoto-carbon-credits for selling/trading on the carbon markets.

A key issue the Report had to deal with is that Guyana is already a low deforestation country (see above). It therefore cannot reduce deforestation by much. As such, any proposal in the nature of compensation for reductions in deforestation rates will yield very modest financial benefits for Guyana. As far as I can gather, the approach adopted by the Report involves first estimating a *hypothetical* Economic Value to the Nation (EVN) from pursuing activities that lead to *total* deforestation. The EVN is supposed to give an idea of the opportunity cost of maintaining the forest intact. It would appear that the EVN is calculated as [USD/ha * No. of hectares], for each of three activities associated with forest conversion, net of the local ecological cost of deforestation.

Given their negligible rates of deforestation, this EVN will never be realized in Guyana and other HFLD countries however, so the Report proposes using a *predicted* rate of deforestation as the baseline for assessing reductions in deforestation.¹ This is called the ‘economically rational deforestation baseline.’ A rate of deforestation of 4.3 percent per annum is assumed, so that there will be total deforestation, i.e., a total loss of forest cover, in about 25 years (p.14). The idea is to spread the EVN over 25 years, and discount the stream of EVN at a rate of 10% to get the EVN in present value terms.

The Report then argues that the present value of the EVN is less than a given upper bound of what the World should be willing to pay Guyana not to engage in deforestation.

Comments

1. It has been very difficult to follow the logic of the Report. The authors should have known that the issue of payments for AD/REDD activities is the subject of serious and complex negotiations and that any proposal that is poorly written and technically flawed (as is this Report) is very likely to be dismissed as being less-than-serious.

1.1. Basic editorial rules were not followed. First, the same concept is used to refer to magnitudes that are given in different units. In particular, though there should have been total clarity on the EVN, this expression is used variously to refer to [USD/ha * No. of hectares], to [USD/ha] and to the present value of [USD/ha * No. of hectares]. Furthermore, the Report actually calculates a “constrained” EVN (though this terminology is not used). In these comments, the EVN will be used in the first sense only; any other concept will be referred to explicitly.

1.2. Moreover, the Report was not clear about the relationship between the ‘economically rational deforestation baseline’ assumption and the EVN. The former concept referred to the assumption that the rate of reduction in forest cover will be

¹ This is in contrast to the more usual baseline derived from an average of historical trends of deforestation. With the latter baseline, countries that have in the past had high deforestation rates will be ‘winners’ under compensated reduction mechanisms while countries like Guyana will be ‘losers’ for the simple fact that deforestation is already negligible.

about 4.3% per annum, and it implies that the total forest cover will be eliminated in 25 years. In calculating the EVN associated with timber however, the Report assumed that 40m³/ha of timber will be extracted by loggers. Though this represents a 100% increase in the current allowable rate of timber harvesting, is it consistent with the assumption that 4.3% of forest cover will be removed each year, and that the total forest cover will be compromised in 25 years?

In fact, it is clear that the Report is only calculating a *constrained* EVN that reflects the technical, market and legal factors (p. 14) that would clearly limit the rate of deforestation. As such, the EVN does not have to be consistent with the 4.3% assumption. My view is that the 4.3% assumption only facilitates the calculation of the present value of the (constrained) EVN in the Report, and that it really does not address the issue of the baseline deforestation rate – despite what the Report says. The 4.3% assumption would have simply justified spreading the constrained EVN over 25 years for discounting at an appropriate discount rate (assumed to be 10%). What really addresses the baseline issue is the assumption that the allowable cut will increase by 100% over the current 20m³/ha.

- 1.3. There are specific instances of apparently fundamental errors and methodological problems in the computation that add further confusion and compromise the validity of the entire Report. A sample of these is given below:
 - 1.3.1. Assuming \$2/ha in protection costs, the Report calculates avoided protection costs to be \$0.3 billion. This actually implies that Guyana has 150 Million hectares of forest, but clearly this is incorrect (the correct amount is 15 Million hectares).
 - 1.3.2. In calculating the EVN, the foregone value of converting forests to standing timber and ‘post-harvest’ activities are added together. However, if the EVN is to be used to calculate payments for compensating for/inducing reductions in deforestation, all that may be required is compensation for foregone timber values when these are (sufficiently) larger than the value of post-harvest activities.
 - 1.3.3. In calculating the constrained EVN of timber, the growth in wood prices is estimated using a naïve process based on historical trends in prices from 1961-2005, probably using a program such as BestFit. First, the use of historical trends as the basis for projections was precisely the methodology that was rejected for inferring a baseline deforestation rate. Second, the projections of wood prices should have been done in a more complete model that took account of the determinants of wood prices. The use of naïve projections of the growth of wood prices is however less of a problem given the failure of the Report to make the rate of harvesting/deforestation dependent on the prices of major commodities.
 - 1.3.4. In the calculation of the present value of the EVN, the Report is not clear on how the EVN is spread over the 25 years that will lead to total forest cover loss.

The ultimate magnitude of the present value of the EVN depends (in part) on how the EVN is spread over time. Considering that the current deforestation rate is close to zero, it would be wrong to spread the EVN evenly over the 25 years.

- 1.3.5. Though the Report gives a list of forest valuation studies that use a 10 discount rate, this does not justify using this rate to calculate the present value of the EVN. As the point of the present value of the EVN is to secure payments for avoiding deforestation, the discount rate will itself be an issue for the negotiations. The authors themselves should know that sustainable development is incompatible with such a high discount rate. At any rate, a lower discount rate would have yielded a higher present value of the EVN, so it is a mystery why this rate was chosen – except of course, it was chosen to ensure that the imputed price of Guyana’s forest carbon will be less than the ‘upper bound,’ which the Report refers to as the EVW_c .

No serious appeal for payments for avoided deforestation can rest on such flimsy arguments or on such contrived assumptions.

2. Apart from these specific problems with the Report, there are more general concerns:

- 2.1. The Report takes for granted that the relevant parties will indeed use AD or Reduced Emissions REDD activities as the basis for International Payments for Environmental Services (IPES), but there is no consensus on this. It is true that there have been suggestions for the establishment of a special fund that will be used to compensate countries for AD/REDD activities but there is extreme concern about how payments (from the fund) will affect carbon prices and about the moral hazard issues that will arise. Incidentally, these concerns are relevant precisely for countries such as Guyana, whose deforestation rate is negligible. (Karsenty, 2007 and Richards, 2008 discuss these issues).²

Unfortunately, the Report has not really dealt with any of the real obstacles that negotiators are now addressing. Indeed, its conclusion that the imputed carbon emission reduction price associated with the EVN calculated for Guyana will be about \$2 to \$11/tCO₂e might well justify/increase the concerns about ‘market flooding’ in the carbon markets. Even though the Report does not envisage the inclusion of forest-based carbon credits in the carbon markets, whenever the alternative imputed price for carbon is lower than that traded carbon credit price, there will be increased interest in participation in an IPES and a corresponding

² The President’s very mention that the Report shouldn’t be understood as threatening deforestation if Guyana does not get the EVN from the international community is precisely what will remind potential donors of the moral hazard concern, that after they have paid up, HFLD countries will anyway pursue economically rational but ecologically harmful forestry practices. It is true that Guyana’s regulatory regime gives assurances that this will not happen, but in the very calculation of the EVN, the Report envisages a ‘more permissive regulatory regime.’ Clearly, Guyana is prepared to do this or else the EVN associated with timber would have been much lower!

reduction in demand in the carbon markets. (The ‘market flooding’ concern is precisely that the price of carbon credits in the carbon markets may fall so much that avoided deforestation no longer makes sense for participating countries).

In similar vein, the Report has not addressed the issue of ‘additionality,’ and the clear position that countries have that governments should not be paid for things for which they are not responsible (see the comments on Guyana’s negligible deforestation rate, below).

- 2.2. Though the Report adopts a predicted rate of deforestation as the baseline against which to measure reductions in the rate of deforestation, there is no general agreement on what baseline should be used. Other suggestions currently being discussed are the ‘historical trends’ proposal and the ‘adjusted factor’ proposal of the Congo Basin countries. The most hopeful proposal (from the perspective of the Report) is for case-by-case negotiations with countries about the baseline. Whatever materializes for Guyana, the point is that the use of the “economically rational deforestation baseline rate” is not a given.
- 2.3. At any rate, an economically rational deforestation rate of 4.3% is ridiculously high. The current rate of deforestation is almost zero and has been almost zero for decades. There is absolutely nothing that can justify a rate of deforestation of 4.3%: there is no population pressure on the forests; the investment that will be required to reach this deforestation rate is enormous (notwithstanding the statement that “70% of (the logging) companies are expected to be foreign-owned”³); the investment required for converting forests into the land-use alternatives is also enormous; commodity prices might not increase to support any investment that will lead to deforestation; etc. Moreover, no serious negotiating partner will accept as justification for assuming a 4.3% deforestation rate the statement that “This rate of deforestation is comparable to deforestation in the nearby Brazilian state of Para and Mató Grosso (p.14).” A much more robust estimation procedure will be required.
- 2.4. But as stated earlier, maybe the 4.3% assumption does nothing more than to facilitate the calculation of the present value of the EVN. The real baseline assumptions are in the background of the calculation of the EVN – the assumption that the allowable cut will increase to 40m³ and the assumptions about the land use alternatives to the maintenance of the forest. The comments about the investment that will be required to support these baseline assumptions remain valid however.
- 2.5. What is more, Guyana has already changed its legislation and regulations to ensure that deforestation will not occur. One cannot imagine the Government going back to Parliament to secure a ‘more permissive regulatory regime’ to make it possible for loggers to extract 40m³ /ha of timber. If the Government were to do this, the international community will identify such action as precisely the “moral hazard” problem with an IPES system that must be avoided! But without such changes in the

³ The current global recession is so severe that it will take a very long time before even foreign companies will be able to raise capital abroad for investment in Guyana.

regulatory framework, the predicted baseline assumptions will be patently invalid.

- 2.6. Finally, there is the issue of the ‘Upper Bound.’ The idea of the Upper Bound is that if the present value of the EVN is less than what the World *should* be willing to pay, then (the Report seems to assume) the World *will* be willing to pay for avoided deforestation in Guyana. The ‘World’ is not however a monolithic decision maker, but is made of countries that have historically shown that at a national level they are willing to be free riders, pursuing industrialization without paying for its external costs and reaping the benefits associated with avoided deforestation without paying for them.

Trying to get free-riders to contribute to public goods provision is even more difficult and certainly more complicated if the public good already exists and is already providing very secure public benefits, as in the case of Guyana’s forests. In such cases, free-riding is not even an issue. Consider the carbon stocks in the world’s oceans. The carbon stored in the forests is precisely like the carbon stored in the oceans – but who will pay for these latter benefits, and to whom will the payments be made? The only difference between carbon stocks locked away in trees and those locked away in oceans is that trees can be cut down but oceans cannot be extinguished.

Strategically, Guyana’s real and stated commitment to avoiding deforestation, and its aggressiveness in codifying this commitment in laws and regulation, will convince other countries that they should not make any payments for Guyana’s forest-carbon services. There will be no moral angst about not compensating Guyana. What will be considered morally reprehensible behaviour is for Guyana either to threaten to cut down trees unless compensation is paid, or to cut down trees after compensation has been paid.

Conclusion

The consultants should be asked to immediately tidy up the Report. At a minimum, the Report should be written in such a way that the reader would be able to understand how to reproduce the Report’s calculations. To this end, the consultants should be asked to show the calculation of the EVN, instead of simply giving the assumptions used. Alternatively, a fully specified model should be presented. This should at least assist the authors to eliminate the technical flaws mentioned above, and to make it easier for persons to read the Report.

Even this however will not resolve the general problems outlined above. These problems are so fundamental that it might be useful at this stage to call ‘time-out’ on the otherwise commendable initiative of the Office of the President. Failure to do this might do immense harm to Guyana’s efforts to seek compensation for the carbon sequestration services that its forests provide.

References

Karsenty, A. (2007). “Is REDD a Workable IPES?” Downloadable at <http://www.unep.ch/etb/events/pdf/Karsenty%20presentation%20SEV%20Avoided%20deforestation.pdf>

Richards, M. (2008). “REDD, the Last Chance for Tropical Forests?” FRR Policy Brief, August 2008. Downloadable at <http://www.theidlgroup.com/documents/PolicyBrief-REDDLastChanceforTropicalForestsAugust2008FINAL.pdf>.

APPENDIX

Suggested Framework for Assessing the Funding Prospects for the LCDS

Note that this appendix only assesses the *funding prospects* of the LCDS. It argues that these prospects are not bright, and that the funding from Norway might in fact represent an upper limit on what can be expected from the international community. The LCDS is essentially a set of investment projects, characterized by low-carbon emissions, for which Guyana seeks international funding. In particular, this Appendix does not seek to address the LCDS as a development strategy. Suffice it to say though, that Guyana has attempted to achieve development by pursuing investment strategies in the past, but with rather limited success. If the LCDS ‘works,’ it might actually be a tribute to its special character, i.e., being low-carbon. The problem, as China and India know too well, is that low-carbon might also mean low-risk, low-return in ‘improving-standard-of-living’ terms.

Look first at the left hand side of the table below:

		Guyana's Options				Guyana's Options	
		Pursue LCDS	Abandon LCDS			Pursue LCDS	Abandon LCDS
Rest of the World Options	Fund LCDS	4 , 4	-5 , 6	Rest of the World Options	Fund LCDS	· , ·	· , N
	Don't Fund LCDS	7 , -2	-2 , 3		Don't Fund LCDS	N , ·	N , N

Guyana has two options, or possible strategies: either pursue the LCDS and engage in sustainable activities (only), or abandon the LCDS engage in non-sustainable activities. Guyana’s strategy options are shown as the columns of the table or matrix.

The Rest of the World (ROW) also has two options: fund the protection of Guyana’s forests (i.e., finance the LCDS), or don’t fund it. Funding will involve contributing to some Special Fund. The Fund will compensate Guyana for the ‘opportunity cost’ of foregoing more financially attractive but less sustainable activities. The ROW strategies are listed in the rows.

The ‘cells’ of the table give the net benefits or the payoffs to the various strategies that are followed by Guyana and the rest of the world. In each cell, the first number is the net benefit to the Rest of the World and the second number is the net benefit to Guyana.

The first cell with the net benefits (4, 4) has the following interpretation: If the Rest of the World funds forest protection in Guyana while Guyana chooses to engage only in sustainable practices, the ROW gets a positive net benefit of 4 and Guyana also gets financial benefits equal to 4. ROW gets positive net benefits because it is better for the world if Guyana preserves its

forests. Forest preservation gives Guyana positive net benefits of 4 because even though sustainable practices mean foregoing significant benefits, the Special Fund compensates Guyana. But, as shown in the cell immediately below this first cell (i.e., the cell with net benefits (7, -2)), Guyana is clearly worse off in the sense of getting negative net benefits (-2) if it preserves its forests without compensation from the ROW. Meanwhile, ROW gets the maximum net benefits (7) when Guyana protects and preserves without ROW support.

What will ROW do?

This will depend on whether Guyana chooses to protect and preserve, or to deplete its forest resources.

If Guyana commits to LCDS and to protecting and preserving its forests, what is the best or most rational strategy for ROW? Clearly, 'Don't Fund' is better because it yields net benefits of 7, as against the 4 associated with the alternative 'Fund' strategy.

If instead Guyana intends to use its forests unsustainably, it will (again) be better for ROW not to contribute to the Special Fund. The top right-hand cell with net benefits (-5, 6) shows that when Guyana chooses to cut down its forests, the ROW loses a maximum of net benefits (-5) when it contributes to the Special Fund. Given Guyana's decision to cutting down forests, it would clearly be better for ROW not to bother to put up any money. The second row, which corresponds to the 'Don't Fund' strategy, shows that ROW will still lose from Guyana's decision to cut down its forests, but it will lose less (-2) if it doesn't contribute.

Note then that whether Guyana commits to protection and preservation or to unsustainable practices, ROW will always be better off choosing the 'Don't Fund' strategy. On the right-hand diagram, the payoffs for ROW are labeled 'N' in the bottom row, to indicate that ROW is better off choosing Don't Fund, regardless of what Guyana does. In other words, the Don't Fund strategy *dominates* the Fund strategy and ROW will not find it appealing to contribute to the Special Fund.

What will Guyana do?

This will also depend on what ROW does, or at any rate on what Guyana believes that ROW will do.

Suppose that ROW chooses to contribute to the Special Fund. [We know that ROW will never do this, but suppose it does]. Then Guyana will end up with a net benefit of 4 if it protects and preserves, as against a net benefit of 6 if it engages in unsustainable production from the forest. Unsustainable practices are doubly beneficial to Guyana if ROW chooses to contribute to the Special Fund: it will enjoy the superior financial gain from logging etc. plus additional resources from ROW. The assumption is of course, that Guyana can get away with unsustainable practices and can trick ROW into believing that it is practicing sustainable forestry.⁴ This is not an unrealistic assumption, at least not in the short run.

Suppose instead that ROW chooses not to fund sustainable forestry in Guyana. [As argued above, it is reasonable to assume that ROW will do this]. Then Guyana stands to lose from

⁴ It is because this is a real possibility that DFID and other donor agencies have been tying their support to greater monitoring.

sustainable practices. Indeed, the net financial gain is -2, compared with a financial gain of +3 if Guyana chose to use its forest resources unsustainably.

Regardless, of what ROW chooses (to Fund or Not to Fund), Guyana will always be better off choosing to make *unsustainable* use of its forest resources. This is shown in the right-hand side diagram by giving the payoffs to Guyana of unsustainable forest activities the label 'UN,' whether ROW funds or doesn't fund. From Guyana's perspective, the 'Abandon LCDS' strategy *dominates* the alternative strategy of preserving the forests.

Equilibrium

What will emerge as the most natural pair of strategies for Guyana and ROW? Since Don't Fund dominates Fund, ROW will always choose Don't Fund; and since Abandon LCDS dominates Pursue LCDS, Guyana will always choose to engage in unsustainable use of the forest (or at any rate, Guyana will be *prepared to engage* in unsustainable practices).

Don't Fund (for ROW) and Abandon the LCDS (For Guyana) will emerge as the equilibrium. It is associated with the pair of payoffs labeled (N, N) or it is the *Nash Equilibrium*. This is what both parties will do, and indeed will expect each other to do. [By the way, this framework is known as the Prisoners' Dilemma).

Despite the LCDS rhetoric, it will be clear to the ROW that the *incentives exist for Guyana to abandon the LCDS*. If, as the McKinsey Report claims, it is rational for Guyana to use its forest resources unsustainably in pursuit of economic development, it is rational in precisely the same sense for Guyana to abandon the LCDS after it would have received funding from the LCDS. One only has to consider what will happen if the investment projects do not yield the benefits that are expected. Then the government of the day will have both a moral and a political responsibility to abandon the LCDS.

Comments

ROW will be best off with Guyana committing to preserving its forest resources, and will respond by *not* funding. In other words, the lower left-hand cell is the ideal state for ROW. Donor agencies will clearly like this to happen, because Guyana will forego using its forest resources with a minimum of assistance from the ROW. My opinion is that DFID in particular attempted to dupe Guyana into this state, but the FPA eventually realized this. The GOG is going along announcing commitments to forest preservation, **but what it will get is an absolute minimum of funding**. The GOG can therefore offer the forest resources to ROW in the hope that this gesture of goodwill will be repaid in reciprocal financial commitments; but it shouldn't expect anything in return, especially if it has *committed* to foregoing the use of the forest resources.

Both Guyana and ROW will be better off with the (Fund, Protect) strategies than with the (Don't Fund, Don't Protect) equilibrium but the latter is a forest degradation 'trap.' Even if Guyana were to commit to protection and preservation, ROW will be better off with not funding and conversely, if ROW were to commit to funding, Guyana will be better off with not protecting.

The LCDS Strategy – A Quick Appraisal of Its Feasibility

The proposal for a Low Carbon Development Strategy is based on the (Fund, Protect) strategies. This by the way is known as the Pareto Efficient pair of strategies, and it most desirable. What is required is to change the payoffs so that this pair of strategies emerges as the equilibrium. There

is a major challenge to doing this: the benefits of preserving Guyana's forests are in the nature of a public good (meaning that the ROW can benefit from Guyana's forests without having to pay for these benefits). Another challenge is that, even if it were possible to convince the ROW to contribute to the Special Fund, how does one determine how much should be the aggregate contribution and how this burden should be shared among the ROW units?

Conclusion

This analysis is basic, but it does indicate that it is highly unlikely for Guyana to get funding for the LCDS – Norway notwithstanding. The analysis was also very limited because it did not attempt to deal with the LCDS as a *development strategy*. Suffice it to say though that stakeholders reviewing the LCDS should be reminded that development is not about investment projects and the financing of those projects, however commendable those projects may be. Moreover, and the new Skeldon Sugar Factory is testimony to this, investment is fundamentally risky, and the returns to investment are even more risky.