

### **How does the stock-flow address the financial risks a country faces when participating in REDD?**

The stock component of payments can smooth the risk of a country's participation in REDD. Changes in emissions for a specific country can have a strong unpredictable element due to climactic and other variables, which means that the link between a country's REDD activities and its emissions from deforestation can be uncertain. However, a country's share of the global forest carbon stock does not change drastically from one year to the next. This means that the stock component of the payments to a country will tend to have a lower volatility, guaranteeing the basic functioning of REDD activities also in a low performance year.

### **Is the stock-flow approach being applied anywhere?**

The stock-flow approach underlies current negotiations between state governors in the Brazilian Amazon on how to distribute REDD funds among those states with high deforestation rates and those with low deforestation rates. The Brazilian version of the approach also includes a higher payment rate per unit of reduced emissions once a state reaches a target emission reduction. This approach incorporating targets, when simulated at the international level, appears to be the most environmentally effective of all proposals.

### **What countries would benefit the most from this approach?**

Countries with both high remaining forest cover and high historic rates of deforestation will receive the largest incentives from any successful REDD mechanism, at least over the next few performance periods. The same is true for the stock-flow approach, but the stock-flow approach can also provide substantial incentives for countries with high standing carbon stock but low historic rates of deforestation.

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## **Stock-Flow: Balancing Effectiveness, Efficiency and Country Participation in a REDD Mechanism**

### **Introduction**

Reducing Emissions from Deforestation and Forest Degradation (REDD) has become widely recognized as an important option in the policy toolkit for mitigating climate change. The focus within the UNFCCC negotiations is now centered on how to implement REDD. As part of the broader negotiations, the Subsidiary Body for Scientific and Technical Advice (SBSTA) is discussing the methodological issues relating to reference levels for REDD. This discussion is fundamental because the design of these reference levels will determine a REDD mechanism's overall reductions in emissions from avoided deforestation and degradation (effectiveness), the efficiency in terms of the budgetary cost of obtaining the reductions, and the distribution of REDD revenue across countries and regions (equity).<sup>1</sup>

There are a number of proposed methods for establishing such reference levels and these proposals differ a great deal in terms of their effectiveness, efficiency, and equity.<sup>2</sup> Many existing proposals attempt to maximize all three through the use of a single metric (the reference level). Yet trying to deal with all of these using the reference level as the only parameter can be difficult because there will be trade-offs between attaining the best environmental outcome among participating countries, maximizing country participation, and doing so in a cost-effective manner. For example, countries with high past rates of deforestation will have ample incentives to participate from a reference level set relative to historic deforestation rates, while countries with low rates of past deforestation would have limited incentive to participate unless potential deforestation of forest stocks are considered. However, trying to adjust reference levels to optimize participation will have an impact on the overall emissions reductions and the associated cost per unit of reduction attained.

It is important to incentivize as many countries as possible in order to avoid international leakage, but at the same time provide a set of incentives that leads to an environmentally effective and economically efficient outcome. To incentivize participation using reference levels alone one could allocate a more generous reference level to low deforestation countries, but this would introduce "hot air" into the system and affect its environmental integrity. Some proposals avoid creating "hot air" by reducing reference levels of countries with high historic emissions, so that reference levels can be increased for countries with low historic emissions yet high stocks. However, this approach would solve one problem while creating another: countries like Indonesia would receive credits for emissions reductions only once they reduce emissions beyond 30-40%. We believe the lack of compensation for initial reductions for some key countries would be a real stumbling block for a system attempting to use reference levels alone to maximize participation while maintaining environmental integrity. Therefore, we propose a mechanism that separates the issue of establishing credible reference levels from the need to involve as many countries in the mechanism as possible.

The stock-flow approach addresses this conundrum by using two instruments — the reference level for flows and stabilization funding for stocks — to pursue the two objectives of environmental effectiveness and broad participation. To incentivize emissions reductions (flows), national reference levels are set based on a ten-year historic average of emissions for all countries. This methodology results in a simple and credible allocation of credits based on performance.<sup>2</sup> Alternate funding is created to incentivize conservation of standing forests through a levy on all REDD transactions. This “stabilization funding” would provide funding to all countries based on their proportion of tropical forest carbon stocks. Therefore, under a stock-flow approach, countries receive compensation both for reducing emissions and for maintaining existing stocks.

## **Stock-Flow: Frequently Asked Questions**

### **Why is the approach called stock-flow?**

Emissions from deforestation are the transformation of a carbon stock into a flow to the atmosphere. The stock-flow approach provides *stock* maintenance payments by charging a levy on *flow* payments for emissions reductions relative to a historic average.

### **Does the stock-flow approach generate credits from stocks?**

No, it does not. Only emissions reductions (reductions in *flow* from stocks) generate credits. However, the stock-flow approach does generate payments based on stocks, including stocks that are not expected to generate emissions in the current performance period. These “stock payments” are not referred to as emissions reductions “credits” that can be traded as part of a cap-and-trade mechanism simply because they are not considered an emission offset during the same time-period as existing emissions from other sectors. Funding for stock payments results from the redistribution of revenue to a stabilization fund. That funding is then distributed based on a country’s proportion of standing carbon stocks.

### **How does the stock-flow approach differ from other proposals?**

Other proposals attempt to deal with effectiveness and efficiency using the reference level as a single parameter. By using distinct instruments for the two objectives, the stock-flow approach achieves the same level of effectiveness as other proposals but in a more economically efficient manner and with broader country participation. All countries receive credits for all reductions from their historic emission levels and a separate incentive to conserve their standing carbon stocks. The incentive associated with carbon stock not being associated to carbon credits ensures the environmental integrity of the credits generated while maximizing country participation.

### **Why do you withhold credit revenue – isn’t that like a tax on REDD?**

An inherent trade-off exists between meeting the dual objectives of maintaining the environmental integrity of the mechanism and maximizing the participation of countries. In order to meet the objective of maximizing participation, many proposals raise the reference levels of countries with historically low rates of deforestation so that they have “room to grow” while still generating emission reduction credits. In order to maintain the environmental integrity of such a mechanism and reduce emissions globally, this increase in reference levels would need to be compensated by lowering reference levels in countries with historically high rates of deforestation. (Essentially you must rob Peter to pay Paul, as the saying goes.) This reduces incentives for countries with historically high rates of deforestation (much like a tax). This issue is difficult to avoid.

In the stock-flow approach, there is a levy placed on REDD transactions, but the money is redistributed among all countries, through a stabilization fund, to use for conserving standing stocks. This levy is less onerous than a straight tax, and provides countries with the dual incentive of both reducing emissions in threatened forests and maintaining the integrity of (historically) non-threatened forests. The stabilization fund creates a guaranteed stock payment linked to the scale of the forest carbon credit market that can, and should, be supplemented by public funding sources such as auction revenues and ODA.

### **Aren’t you paying countries twice to conserve the same forest?**

No. There are no double-payments made. The withholding rate on REDD transactions simply redistributes revenue for the payment of reducing emissions to direct some of it toward forests that have not been under threat historically. Essentially it provides incentives for both reducing the pressures on threatened forests and to conserve forests that are not currently under threat but could be at danger of absorbing leakage from a REDD mechanism.

### **Why would one want to compensate stocks when climate change mitigation is about reducing the flow of emissions? Isn’t there a loss in economic efficiency?**

At the heart of the question is the issue of leakage of deforestation to countries that are not currently emitting. The basic idea is to provide these countries with an incentive to not start deforesting. One way of doing it is a lump-sum of money proportional to their stock that, in case a country’s emissions exceed historical, will be reduced at a given rate for every tonne of emissions in excess of their reference level.

Simulation results indicate that if the model takes leakage into consideration, the stock-flow is the most economically efficient among the proposals currently on the table. This occurs because the stock payments are not just transfers; instead they are structured so as to create incentives to reduce emissions.

### **Why provide stock payments to all countries and not just those with low deforestation rates?**

It would be attractive to limit the stock payments only to those countries that have very low emissions. However, it is difficult to determine the exact cutoff point above which a country is no longer a low deforestation country. Such a threshold would cause “borderline case” countries to move back and forth between receiving stock payments or not from one year to the next. The stock payment, based on a country’s share of the global forest carbon stock, is continuous and does not suffer from this drawback. Furthermore, countries that reduce deforestation by receiving a stock payment will see this as a reimbursement of the levy charged on their emissions reductions. So the stock payment increases the effective price countries receive for their emissions reductions, thereby having an impact also on their incentives.

The stock payments received, based on the size of a country’s carbon stock can also be viewed as funds that are proportional to the effort required to avoid in-country leakage. After all, national-based REDD “solves” in-country leakage in the sense that it eliminates it as an accounting issue, but countries with large stocks will still have to address this challenge within their borders, whether or not they have high deforestation rates.