

are also relevant for future climate agreements.

- Incentives are needed for reducing deforestation in nations that are experiencing high rates of deforestation and in those where low deforestation rates could rise absent outside support;
- Public and private funding mechanisms are needed;
- Only verified emission reductions should be included in private carbon markets;
- Public funding mechanisms should help nations build their capacity for action, implement policy and governance reforms, provide upfront funding and purchase verified emission reductions, particularly in high-risk, non-market countries that may be ignored by private investors;
- Credible protocols and common standards are needed to measure, monitor and verify emission reductions in tropical forests;
- Upfront funding is needed to help developing nations with early phases planning and implementation; and
- Forest provisions in an international climate agreement should be compatible with the future creation of a comprehensive system for managing all terrestrial carbon, including forests, agriculture, rangelands and other sources.

Finalizing international negotiations on tropical forest emissions will also require nations to resolve a number of highly technical methodological issues. The United States may need to align technical standards proposed by the State Department to international climate talks with those contained in climate legislation. In general, these issues are best resolved by the Executive Branch, drawing on the technical expertise that resides in relevant agencies, with timely input from relevant scientific advisory bodies. For purposes of implementing new domestic climate laws, Congress should ask the Executive Branch to promulgate new regulations and to consult with the National Academy of Science and other science advisers when developing these regulations and proposed methodologies in global climate negotiations.

Making U.S. Policies Work Efficiently

Recommendation: The pool of emission allowances set aside to help control the cost of a new cap-and-trade program (the “strategic reserve”) should be large enough to manage the risk that the supply of forest carbon “offsets” may prove insufficient to stabilize prices and price spikes. While the United States should reduce the cost of climate action by partnering with developing nations to finance forest sector emission reductions, if the United States adopts a cap-and-trade program it must also guard against the possibility that U.S. demand for international forest carbon will exceed available supply.

A substantial amount of work lies ahead. Developing nations must transition through the three phases of action identified above — (1) planning, (2) implementation of forest sector policy and governance reforms and (3) verification of actual emission reductions. Few developing nations are far along in the planning process and most need substantial technical assistance to even get started. Not all developing nations have the political will and societal buy-in to implement needed forest sector policy reforms. And only a few developing nations today are close to having the capacity to reliably measure, monitor, and verify actual emission reductions.

Despite these challenges several credible studies predict that developing nations should prove capable of meeting U.S. and global needs for low-cost forest carbon offsets. The table below provides an initial estimate of forest carbon offset quantities in early years of a U.S. cap-and-trade program (see Table 2). While

these quantities are significant, they nevertheless may fall short of the amounts needed to achieve U.S. cost containment and climate mitigation goals, depending on demand from other countries, highlighting the urgency of upfront funding. The U.S. leadership and financial and technical resources recommended in this report will be

Table 2: Current Estimates of Availability of Verifiable Emission Reductions from Forests (millions of tons of CO2)

Year	2013	2020
Top 9 Countries ¹²⁷	950	1,400
Rest of world	200	370

Source: Climate Advisers analysis, based on preliminary data provided by Boucher, D. (2009) and Resources for the Future (2009) *The Forest Carbon Index*, Washington, DC. (forthcoming report)

critical in bridging the gap between this current potential of verified reductions and the additional reductions needed to achieve the goal of reducing emissions from deforestation 50 percent by 2020.

The possibility of a gap between international supply and U.S. forest carbon demand is reason for concern. The road to access U.S. and global incentive programs may be a long and demanding journey for many developing nations. For some, this will require fundamental transformations in their forest-based economies and societies. If progress in reducing deforestation proves more difficult than expected, the shortfall between international offset supply and global offset demand could lead to substantially higher compliance costs for U.S. regulated companies under a domestic cap-and-trade program.

For both economic and environmental reasons, therefore, the United States needs a policy mechanism to guard against uncertainty in international forest carbon supply with global offset demand, thereby controlling costs and avoiding economically damaging price spikes.

The House climate bill includes one such mechanism—a “strategic reserve” of emission allowances. If allowance prices reach a certain threshold (initially \$28 per ton but changing over time based on market prices), companies would be allowed to purchase at that price a limited amount of additional allowances from the government-managed strategic reserve. The emission allowances in the strategic reserve would be borrowed from current and future years of the cap-and-trade program. This means that emissions could rise in the short run, but companies overall would need to reduce a corresponding amount of emissions in later years to avoid undermining long-term emission reduction goals. Total U.S. emissions from 2012 and 2050 would not increase, they would be shifted forward slightly within that period. The EPA would use revenues from the sale of strategic-reserve tons to purchase verified emission reductions from tropical forests. Emission reductions purchased in this manner would refill the strategic reserve to allow for future sales to U.S. companies, assuming prices remain high.

To be effective, the strategic reserve needs to be designed in a way that takes into account expected

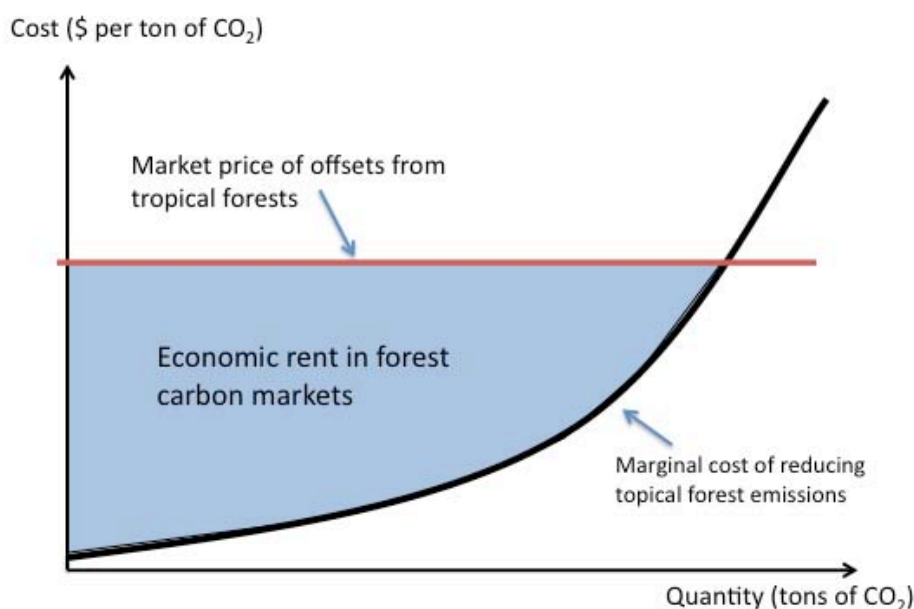
and unexpected mismatches between domestic offset demand and international forest carbon offset supply. More specifically, the size of the strategic reserve needs to be large enough to account for the possibility that the supply of forest-carbon offsets will be insufficient to control costs, and thus demand for strategic reserve allowances could be larger than expected. Similarly, the strategic reserve needs to avoid relying too heavily on the notion that the United States will refill the strategic reserve with tropical forest emission reductions in case those forest carbon tons are not immediately available. More analysis is needed on the right role for tropical forest emission reductions in refilling the strategic reserve and to determine its optimum size.

While a mechanism to deal with gaps between tropical forest offset demand and supply is essential, it is not sufficient. The United States needs to work to avoid this gap rather than only dealing with it if and when it occurs. In other words, the best strategy would be for the United States to develop and fully fund programs to help developing nations quickly generate a stable supply of tropical forest offsets. This is why setting aside 5 percent of the allowance value of tradable emission

allowances for new programs that build the capacity of developing nations to participate in U.S. carbon markets is so important. As this set-aside funding will not be available until a cap-and-trade program takes effect, foreign-assistance bridge financing in the range of \$1 billion is needed from now until 2012. Together, these public funding programs would prime the pump for the forest carbon offset market and reduce the economic risks of climate policy for the United States.

Recommendation: The United States should explore and consider establishing a financial intermediary to aggregate forest carbon offset demand and supply. In order to further contain costs and maximize the environmental benefits of forest carbon offsets if the United States adopts a cap-and-trade program we should explore and consider establishing a financial intermediary to aggregate forest carbon offset demand and supply. U.S. corporations could continue to have the option of purchasing forest carbon offsets directly from developing country partners but could also purchase these offsets directly from a U.S. government entity. The carbon offset aggregator, therefore, would not become a bureaucratic impediment to U.S. companies accessing low-cost forest carbon

Figure 12: Economic Rent in Forest Carbon Markets ¹²⁸



Source: Climate Advisers analysis

offsets without government intermediation, but rather the aggregator would give companies an additional option with substantial potential benefits.

The rationale for a government offset aggregator is straightforward. Individual firms purchasing offsets have relatively limited market power compared to large forest carbon offset suppliers, such as Indonesia. In an efficient global carbon market, U.S. companies would pay relatively high market clearing or equilibrium prices. In many developing nations, however, the actual cost of reducing tropical forest emissions will be substantially lower than the market price. While developing nations should benefit substantially from avoiding deforestation, an un-intermediated forest carbon market would likely result in unnecessarily high costs for U.S. companies as well as windfall profits that could accrue to carbon speculators and/or credit suppliers. This corresponds to what economists call “economic rent” — the difference between market prices and production costs (see Figure 12 on page 61).

In contrast, a U.S. government offset aggregator making bulk purchases would have substantially more market power. Indeed, the U.S. carbon market is expected to be the largest in the world — so large that it may have some ability to drive down market prices. A U.S. government offset aggregator could use this purchasing power to negotiate favorable prices well below the un-intermediated market-clearing price. Given the billions of tons of offsets expected to enter the U.S. market, even a difference of a few dollars a ton would add up quickly. As the cost of reducing deforestation in some countries is expected to be relatively low, the cost savings for the United States could be substantial.

By allowing companies to buy forest carbon offsets from a U.S. government entity at lower-than-market prices, financial flows to developing nations could be kept at manageable levels. As noted above, the scale of expected forest carbon flows overseas has been a major concern in the Senate. Limiting income transfers to developing nations to the level necessary to achieve emission reductions and provide local benefits could improve the prospects for Senate support of strong

tropical forest conservation measures. Lower offset prices also would reduce the overall compliance costs for the U.S. economy. Also, the government aggregator could be structured to sell offsets at a predetermined price. In this way, the offset aggregator could help minimize short-term harmful effects of price volatility and guard against market manipulation by speculators. For these economic reasons an aggregator could make winning Senate support for forest conservation programs significantly easier.

A government aggregator, furthermore, would have major environmental benefits. First, it could maximize the amount of emissions mitigation achieved for each dollar spent. To use a simple example, if the government price were half that of the market price and all companies chose to buy international forest carbon offsets through the aggregator rather than through direct purchases, U.S. private sector funding for international forest offsets would achieve double the emission reductions. Second, with an offset aggregator, the United States would be in a better position to ensure the environmental integrity of offsets entering the U.S. compliance market than with a purely private system. The American people would know that offsets entering U.S. markets through the forest carbon aggregator would meet rigorous U.S. quality-control standards.

Companies that purchase offsets through the government aggregator would receive another important benefit. For offsets purchased from the aggregator, the responsibility for ensuring that international offsets from tropical forests are genuine and were developed in ways that benefited local people, including indigenous communities, would fall on the U.S. government instead of private companies. As the government would resell aggregated offsets to the private sector without linking them to any particular country, region or project (i.e., all offsets from the aggregator would be fungible), U.S. companies would no longer be exposed to the reputation risks that may be associated with tropical forest sector investments about which they may have very little information.

Recommendation: The United States should establish a coordinating council and designate a lead office or agency to oversee tropical forest conservation programs. The success of U.S. international forest conservation programs may depend on whether the United States organizes itself appropriately to manage these complex, new multi-billion dollar efforts. Responsible agencies will need the authority and expertise to successfully carry out the following diverse functions.

Commissioner Perspective:

SAM ALLEN

President and Chief Executive Officer, Deere & Company

“A robust global economy is critical to expanding the agricultural output necessary to meet the increasing needs of a growing and increasingly affluent population. Projections indicate that food production must increase 50% by 2030 and double by 2050. This challenge must be met with a constrained resource base and in an environmentally sustainably manner. Governments of the world must ensure sound public policies that enhance our environment through reduced carbon emissions, particularly from major sources like tropical deforestation. Rational, market-based protections that control the cost of carbon reductions offer the best approach to enabling farmers around the world to meet the food production challenge in a sustainable manner. Halting destruction of tropical forests makes business sense both as a cost-containment measure and as a long-term investment in healthy cropland and forest economies.”

Environmental regulator. Capacity and expertise are needed to verify that emission reductions from international forests are genuine and do not undermine the environmental integrity of a new U.S. cap-and-trade program or U.S.-led international forest conservation programs.

International negotiator. Leadership is needed for U.S. efforts to negotiate the international agreements that climate legislation will likely stipulate are required for participating in either U.S. carbon markets or new government-to-government forest conservation programs.

Provider of technical assistance. Experience and expertise are needed to provide developing nations with the forest sector technical assistance necessary to support effective tropical forest conservation programs.

Financial fiduciary. The ability is needed to manage funds generated by auctioning emission allowances to U.S. companies for future payment to developing nations under the terms of bilateral or regional agreements negotiated with the U.S. government.

Market aggregator. The capacity is needed to potentially act as an “aggregator” of international forest emission reductions for private sector offset purchasers.

Overall strategist. Decisions will need to be made about how the overall strategy of programs should be set and what criteria should be used when allocating funding.

No existing U.S. department or agency has the capacity, experience and expertise needed to fulfill all of these functions. The State Department and USAID lack experience with environmental markets but have experience negotiating climate agreements and providing technical assistance. EPA has that market regulation experience but lacks expertise in tropical forests, as well as sufficient knowledge of on-the-ground political, economic and social conditions in developing nations. It also lacks experience negotiating complex, legally binding international agreements with geopolitical ramifications. The U.S. Forest Service, part of the U.S. Department of Agriculture, understands forest management policies and practices, but not necessarily in developing countries. Only the U.S. Department of the Treasury (Treasury) has experience acting as a market

maker and financial fiduciary. Treasury, however, lacks experience with tropical forests, regulating tradable pollution allowances or negotiating international climate agreements. The National Oceanographic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration (NASA) and the U.S. Department of Interior (through the U.S. Geological Survey) all have relevant technical expertise but do not have the regulatory, diplomatic or international development experience to lead U.S. efforts alone. Many agencies have experience setting overall strategies but they would certainly make decisions based on different criteria and their core competence. To succeed, the United States must develop an

Principle: U.S. policies to reduce tropical deforestation which harness the expertise and authorities of many agencies and departments will be critical to the success of U.S. forest conservation programs.

integrated “whole of government” approach — tapping into the expertise and authorities in all relevant agencies. EPA should regulate forest carbon markets. USAID should administer regional and bilateral in-country assistance programs. The State Department should negotiate international forest emission reduction agreements with developing countries. Treasury should serve as the financial fiduciary and work with multilateral funding mechanisms within international financial institutions, including most notably the World Bank. The Treasury might also be home to the new market aggregator described above. Various technical agencies should play roles consistent with their mandates and capacities.

However, there is the significant risk that by dividing responsibility across the government, implementation of key programs could occur in a haphazard, uncoordinated manner, with different agencies sometimes working at cross purposes and often without taking advantage of their respective strengths. Given the size, complexity and importance of the task, the U.S. government needs

a single coordinating entity. The White House should establish a coordinating council, and designate and fully fund a lead office or agency to serve this coordinating function. A fully united effort that harnesses relevant expertise, capacity and authorities across the entire government is absolutely essential.

The House climate bill envisions a very different approach. It would delegate responsibility for implementing both forest carbon markets and the tropical forest set-aside program to EPA, albeit in consultation with USAID, the State Department, and other appropriate federal agencies.

EPA, and not the Treasury Department, is in charge of auctioning allowances and managing the funds from the 5 percent allowance set-aside. EPA is given primary responsibility for issuing international offset credits and for deciding both what specific land types (such as peatlands lands or wetlands) and what activities (reduced degradation in addition to deforestation) should be considered eligible for funding or offset crediting. EPA, in consultation with USAID, is responsible for promulgating regulations establishing standards that should be met in international agreements required by the bill. The bill does not specify which agency would lead international negotiations with other nations. The decision to give EPA these sweeping authorities was made initially by the Energy and Commerce Committee partly to keep future oversight responsibility with the Committee’s jurisdiction and to avoid referrals to other committees during the legislative process.

While EPA has many strengths and has a central role to play in many aspects of the cap-and-trade program, delegating EPA as the single lead agency would stretch beyond its core areas of competence and create conflicts with other U.S. policy objectives, particularly concerning diplomacy and international development. Given the wide range of expertise needed, the most effective approach would bring the entire U.S. government to bear in solving the problem, supported by a centralized coordinating body.