August 29, 2019

California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Comments on ARB's proposed endorsement of the Tropical Forest Standard

Dear CARB Board and Staff:

The following comments on ARB's proposed Tropical Forest Standard (TFS) focus on the inability of the proposed standard to ensure the environmental quality of the tradable credits generated by jurisdictions using the standard.

Avoided deforestation was excluded from the Kyoto Protocol's offset program, the CDM, because of concerns about the environmental integrity of the credits that would result (Aukland 2003). Countries are currently negotiating whether international support for reductions in tropical deforestation should be primarily grant-based, or whether reductions in deforestation should be allowed to be traded with other forms of emission reduction targets under the Paris Agreement. Endorsement of the TFS would constitute influential support by California for one side of this controversy: for a market-based strategy whereby polluting entities would be allowed to buy offset credits from places where conservation is cheaper, mainly in the global South. They could thus meet their agreed targets while nevertheless emitting GHGs in addition to their capped allowances. We believe that endorsing such a market-based approach is a grave mistake, putting the state of California behind a policy approach that if adopted by other jurisdictions is likely to weaken global climate efforts.

Past international offsetting programs *did* weaken global climate efforts. This happened because ensuring the quality of the traded credits was extremely difficult, both technically and politically. As a result, the large majority of those traded credits did not represent real emissions reductions. Those false, inexpensive credits were used to meet domestic climate targets in place of real domestic reductions.

Ensuring the quality of offset credits from the forest sector is even more difficult than for past offset projects, which were mostly in industrial sectors. Among the challenges are preventing and accounting for leakage, ensuring the permanence of the credit-earning conservation actions, and estimating the deforestation baselines to avoid non-additional crediting.[1]

When forests are conserved in one location but the demand for the products that drive that deforestation remains unchanged, forest conservation can displace rather than reduce deforestation with little or no net reduction of carbon emissions, an effect called ***leakage***. The ***permanence*** of the reductions will always be uncertain because of natural phenomena such as fires and the impacts of climate change itself, and because subnational governments do not control many of the drivers of deforestation, which include prices of globally-traded commodities and national government

[1] McAfee, K. 2015 Green Economy and Carbon Markets for Conservation and Development *International Environmental Agreements: Politics, Law and Economic*s 16(3), 333-353.

policies. Further, it is difficult to assess the extent to which payments are actually responsible for causing reductions to happen, that is, if the paid-for, credit-generating activities are ***additional*** to what would have otherwise happened. A jurisdictional approach to carbon offsetting does not solve these challenges.

Supporting reductions in tropical deforestation from a distance is especially difficult, as evidenced by the failure of REDD+, similar Payment for Ecological Services projects, and jurisdictional forest-conservation programs to achieve meaningful climate benefits.[2] Evaluating the likely effectiveness of a REDD+ program requires deep understanding of the forest sector, drivers of deforestation, policies that have the potential to address those drivers within the specific context of the jurisdiction, and dynamics between government and communities affected by the policy. These are not requirements that can be written into a standard and monitored from afar. Instead, assessing whether a jurisdiction meets these standards would require long-standing, on-going relationships with program administrators and stakeholders, and nimble and adaptive programming responsive to changes in the jurisdiction, the sector, and global factors affecting the sector.

We highlight below how the criteria included in the proposed TFS fall far short of "best practice" for assessing the environmental quality of any program to reduce tropical deforestation. Further, even if best practice for assessing a jurisdiction's program could be applied under the TFS, assessing whether a jurisdiction has met those standards involves subjective judgments and potential conflicts of interests. This would leave the standard open to broad interpretation by buying and selling governments which may have financial and political interest in large quantities of credits regardless of quality, and by verifiers that wish to obtain future contracts.

At stake is the effectiveness of the global warming targets of any states or countries accepting TFS credits. If trading allows the generation of potentially large quantities of false reductions, we are risking the achievement of our GHG reduction targets and the effectiveness of our international global warming policies.

1. Experience with past offset programs

The UN's Clean Development Mechanism

Experience with Kyoto Protocol's offset program, the Clean Development Mechanism (CDM), the world's major experiment in international offsetting offers a strong warning about the risks of international offsetting. The large majority of the CDM's offset projects did not actually reduce emissions.[3] Instead, the program mainly paid project owners to develop "non-additional" projects—projects that they would have developed regardless of the offset program.[4]

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[2] Counsell 2018 Norway's International Forest and Climate Initiative: 10 years of kissing frogs. *Development Today* June 27; Angelsen et al. 2018 Transforming *REDD* Center for International Forestry Research (CIFOR), p 19, p 27; Pattanayak et al. 2010 Show me the money Review of Environmental Economics and Policy 4:2. 254-274; Kill 2019 REDD: A lost decade for international forest conservation. Heinrich Boll Foundation; *inter alia.*

[3] Haya B (2009) *Measuring emissions against an alternative future: fundamental flaws in the structure of the Kyoto Protocol's Clean Development Mechanism*, Energy & Resources Group Working Paper ERG09-01, Berkeley. https://gspp.berkeley.edu/assets/uploads/research/pdf/Haya-ER09-001-Measuring_emissions_against_an_alternative_future.pdf;

This was possible because of the subjective nature of offset project quality assessments. The CDM requires third-party verifiers to assess the veracity of project developers' claims that they needed the income from offset credit sales to go forward with their projects. Without objective, reliable methods for conducting those assessments, and with conflicts of interest that lead verifiers to rule leniently so to be hired a second time by the project developers; verifiers indeed ruled leniently.[5] Given the subjectivity of the assessments, UN administrators tasked with approving each project rejected verifier findings only rarely.

Countries used these false credits to meet substantial portions of their reduction targets. This happened even though many involved knew of the poor quality of the credits.[6] The politics of these transactions leaned towards leniency. Governments using these credits towards their emissions targets appreciated their low cost. Governments selling the credits appreciated the payments. The result was a substantial weakening of countries' Kyoto Protocol climate targets. Trading under the TFS would be subject to similar pressures.

The environmental integrity challenges of offsetting through the preservation of tropical forests is even greater than in the industrial sectors which were the focus of the CDM. Additionality is equally difficult to determine. Forest sector offsets have the further challenges of leakage and permanence. Assessments of TFS standards require subjective judgments just as the CDM did. The subjective nature of these assessments means that third party auditors and participating countries have wide discretion to judge programs of varying quality as complying. This risks weakening global climate agreements, the same way the CDM offset program did.

California's domestic forest offset protocol

The challenges with accurately assessing the reductions caused by forest offset programs are highlighted by a recent report documenting that weak methods for assessing leakage under ARB's U.S. Forest offset protocol resulted in 82% of the credits not representing real emissions reductions achieved.[7] That protocol uses an unrealistically low leakage rate. It also credits forestland owners upfront for their commitment not to reduce the carbon storage on their lands for 100-years while deducting the leakage associated with that commitment evenly over 100 years. This maximizes credit generation at the start of the program, allowing a 100-year commitment to be traded with avoided

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Cames M, Harthan RO, Füssler J, Lazarus M, Lee CM, Erickson P, & Spalding-Fecher R (2016) *How additional is the Clean Development Mechanism?*, Oeko Institut, Berlin.
https://ec.europa.eu/clima/sites/clima/files/ets/docs/clean_dev_mechanism_en.pdf

[4] It is also well documented that the CDM failed to generate sustainable development benefits within communities (Olsen KH 2007 The clean development mechanism's contribution to sustainable development: a review of the literature. *Climatic change*, *84*(1), pp.59-73; CIFOR op. cit. 2018).

[5] Haya B (2010) *Carbon Offsetting: An Efficient Way to Reduce Emissions or to Avoid Reducing Emissions? An Investigation and Analysis of Offsetting Design and Practice in India and China.* (Doctoral dissertation) Energy & Resources Group, University of California, Berkeley. https://escholarship.org/content/qt7jk7v95t/qt7jk7v95t.pdf

[6] Haya B (2010) *Carbon Offsetting: An Efficient Way to Reduce Emissions or to Avoid Reducing Emissions? An Investigation and Analysis of Offsetting Design and Practice in India and China.* (Doctoral dissertation) Energy & Resources Group, University of California, Berkeley. https://escholarship.org/content/qt7jk7v95t/qt7jk7v95t.pdf

[7] Haya B (2019) *Policy Brief: The California Air Resources Board's U.S. Forest offset protocol underestimates leakage*, Goldman School of Public Policy Working Paper (May 2019), University of California, Berkeley; and the accompanying Response to the California Air Resources Board, both at: https://gspp.berkeley.edu/research/working-paper-series/policy-brief-arbas-us-forest-projects-offset-protocol-underestimates-leaka

reductions today in the state's capped sectors. The challenges with ensuring the environmental integrity of a U.S.-based offset program point to even greater challenges of assessing and monitoring a program established by another jurisdiction working at a distance and under very different conditions.

2. Leakage

Leakage can happen when a policy results in reduced production of a traded commodity but there is no reduction in market demand for that product. This can lead to displacement of production to somewhere else rather than a reduction of emissions.

The main causes of tropical forest lost are expanding agriculture, especially palm oil, soy, and cattle ranching, as well as mining, and pulpwood production. These are all very mobile commodities: their production can move into unregulated locations as long as other states and countries do not restrict them. Leakage from reducing production of deforestation-driving commodities in one jurisdiction into another jurisdiction has been well documented in many regions of the world.

On leakage, the TFS states, in general terms, that the jurisdiction should manage and mitigate or detect and account for leakage, including by addressing the causes of deforestation. It gives examples of how this standard may be met. A jurisdiction may demonstrate that it has mitigated leakage by avoiding an increase in mining, timber harvesting, and other extractive activities. But, in contrast, it says that a jurisdiction can demonstrate that it has mitigated leakage by maintaining or *increasing* beef or crop production; the theory is that forests can be spared if more beef is produced on less land through "sustainable intensification."

There are several problems with this standard. First, the standard suggests that a jurisdiction can demonstrate that it has addressed leakage by decreasing production in extractive industries such as timber, oil, and gas. But the reduction of these globally traded commodities can be the cause of leakage, as demand is met by extraction elsewhere. Second, if a jurisdiction demonstrates that it has addressed leakage by increasing the intensity of beef or crop production, the jurisdiction should also have to account for the substantial emissions from intensified cattle rearing including the deforestation impacts from growing crops for cattle feed and emissions from the inputs used in intensified agriculture. Third, in many countries beef production is already increasing, so increased production of beef does not mean that leakage has not occurred. Fourth, increased returns from intensified production of crops and meat can be reinvested to stimulate more, not less expansion of agro-industrial production.[8] The standard includes the need to show that the noted change has happened, in one direction or another, but without specifying that leakage must be fully managed or fully accounted for.

In any case, while researchers have studied and improved methods for estimating the effects of leakage, these estimates remain very uncertain. In our globalized economy, leakage can be very difficult to detect, much less prevent, since reduced production in one place can stimulate increased production not only nearby but across borders and continents.

[8] Oliveira, G. & S. Hecht. 2016. Sacred groves, sacrifice zones and soy production: globalization, intensification and neo-nature in South America. The Journal of Peasant Studies 43(2).

Given the intractability of leakage prevention and accounting, California cannot ensure that offsets-financed conservation programs are resulting in net environmental gain. The fact that leakage is virtually inevitable is not a reason to give up on laws and policies against deforestation. The question, rather, is whether California businesses, or emitting entities anywhere, ought to be permitted to release GHGs in excess of their capped allowances on the assumption that policies in a linked jurisdiction have caused a net reduction of GHGs when there is no practical way of knowing if this is true.

3. Additionality

The credit-trading part of the TFS proposal is a hybrid of two types of carbon-trading programs: i. offsetting and ii. a linkage of two domestic emissions trading programs. Additionality is treated differently from an offset program than for a linkage, but both definitions are aimed at one purpose: to generate credits *only* from reductions that are in addition to what would have happened without the program.[9]

TFS as a form of offsetting

Offsets allow an emitter covered under an emissions cap to reduce or sequester emissions outside of the cap in lieu of reducing their own emissions. The emitter must *cause* emissions to be reduced outside of the cap. A jurisdictional program linkage is unlikely to meet the additionality requirement in the offsets sense of additionality because it would be very difficult to show that payment from California or elsewhere for offset credits is the actual cause of any reductions in deforestation in the linked jurisdiction.

That is because too many factors affect deforestation rates. For example, since 2000 in Brazil, reductions have been affected by a soy and beef moratorium catalyzed by international NGOs, Brazilian national policies, state-level programs, and changes in global commodity prices.[10] The country has received substantial forest-conservation funds from governments internationally, mainly Norway and Germany. It is impossible to be certain just how much deforestation rates were affected by any one of these factors.

The Brazilian government and Acre decided to make forest protection a priority for a range of reasons, not just for the global climate benefits. Brazil has also committed, at least on paper, to reducing its deforestation rate as a part of its commitments under the Paris climate accord.

For all of these reasons, REDD credits could not be considered additional as offset credits. Income from REDD credit sales would support state efforts, but the causal link between California's REDD program and the reductions achieved cannot reliably be made. Additionality in the offsets sense of the term – the purchaser reduces someone else's emissions instead of their own – is not confidently achieved with a jurisdictional REDD-type program.

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[9] The California's 2006/2017 Global Warming Solutions Act requires that for any market mechanism used to meet the target: "the reduction is in addition to any greenhouse gas emission reduction otherwise required by law or regulation, and any other greenhouse gas emission reduction that otherwise would occur" (Cal. Health & Safety Code § 38562(d)(1)-(2)).

[10] Nepstad, D., et al.. 2014. Slowing Amazon deforestation through public policy and interventions in beef and soy supply chains. *Science,* 344(6188)**,** 1118-1123.
https://www.researchgate.net/publication/262876332_Slowing_Amazon_Deforestation_Through_Public_Policy_and_Interventions_in_Beef_and_Soy_Supply_Chains

TFS as a linkage

The TFS can also be understood as a linkage, rather than a pure offset program. There has never been an emissions trading linkage between an industrialized and a developing jurisdiction, so the TFS approach would forge into new territory. In such a linkage, two jurisdictions would need to have similar global warming laws, in terms of stringency and structure, that limit their total emissions. They would work together to lower the collective costs of meeting their respective targets. With regard to additionality, the expectation is that both jurisdictions have made commitments to reduce their emissions to levels that require effort; emissions reductions exceeding their emissions target would be in excess of their domestic requirement, but would presumably only be achieved with the effort exerted by the jurisdictions' governments, emitters, and consumers. Those concentrated efforts would result in additional reductions that could then be traded.

California and Quebec, which have an existing linkage arrangement, both have legally binding caps; both jurisdictions are buying and selling credits, not just selling credits. Net credit sales from one jurisdiction to the other will only occur if the reduction target is achieved and exceeded. Trading is viewed primarily as a way to facilitate joint achievement of the targets, rather than as a source of revenue. California's and Quebec's targets and policies to meet those targets are expected to be permanent reductions in a progression towards the needed deep reductions. If either jurisdiction abandons their efforts and lets emissions rise again it would violate the purpose of the agreement: long-term cooperative action to avoid a temperature increase above 1.5 of two degrees Celsius.

There is a crucial difference between the California-Quebec linkage and any linkage arrangement framed by the TFS. The TFS linkage would be between two jurisdictions with substantially different levels of wealth and responsibility for causing climate change. Distinctions between who should reduce and who should pay for those reductions have been a central point in negotiations of equitable global climate change cooperation.[11] The principle of "common but differentiated responsibilities and respective capabilities" in UN climate agreements justifies financial flows only in one direction: from an industrialized jurisdiction to a poorer one in the developing world. It also justifies why countries with tropical forests should receive international support for some of their "own effort" part of any climate mitigation program.

But this framework does not mean that the reductions are additional. If additionality in an offsets sense cannot be assured or determined, what then justifies the trade of reductions in a jurisdiction's industrial sectors for the estimated, hoped-for TFS reductions? In the linkage world described above, two jurisdictions set targets and work together to lower the costs of meeting those targets for both parties, on a path towards deep long-term reductions. But what does it mean for a jurisdiction with a legally binding commitment to trade with another jurisdiction without a legally binding commitment or "cap," but only pledge to reduce? What does it mean to trade certain emissions with uncertain quantities of emissions reductions or avoidance, taking into account the greater challenges of leakage and permanence with the forest sector?

[11] See the Greenhouse Gas Development Rights as one carefully thought-through analysis of how obligations can be equitably distributed, http://gdrights.org/.

A quantitative analysis of the risk of non-additional crediting

Analysis of the actual deforestation gains and losses in jurisdictions that might be likely potential linkage partners under the TFS illustrates how easy it would be for non-additional credits to be generated. We quantitatively explored the risk of non-additional crediting by calculating the number of credits that would have been generated if the TFS standard were applied starting in 2011 in a set of tropical sub-national jurisdictions. We do this analysis for all states and provinces in the eight countries with tropical forests participating in the Governors' Climate & Forests Task Force: Brazil, Colombia, Cote d'Ivoire, Ecuador, Indonesia, Mexico, Nigeria, and Peru, leaving out states/provinces with less than 3000 ha of forests to avoid jurisdictions without a minimum amount of forest cover. By applying the TFS standard to the past, we can estimate the non-additional crediting that would have occurred, credits would be been generated that would have happened anyway (as the TFS was not in place).

Following the standards laid out in the TFS, we estimate the crediting baseline in 2011 as 10% below the average carbon loss from deforestation during 2001-2010.[12] We then assume that each jurisdiction defined their 2050 target as zero deforestation, a conservative assumption. As prescribed by the TFS, we assume a straight line reduction in the crediting baseline from the 2011 start of the TFS programs to the 2050 zero deforestation target. We then calculate the credits that would have been generated by each jurisdiction during 2011 to 2017. Credit are assumed to be generated starting with the first year that the jurisdiction's carbon loss from deforestation was less than the crediting baseline, and assume that after that year, each jurisdiction would pay back the credits if their emissions exceeded the crediting baseline.

We find that one quarter of the analyzed jurisdictions would have generated non-additional credits during 2011-2017. The quantity of non-additional crediting from these jurisdictions would have totaled 574 million credits over that seven-year period, close to the total emissions reductions required in California during 2021 to 2030.

4. Permanence

The climate effects of fossil-fuel carbon and carbon sequestered in trees or soils are not equivalent. If fossil fuels remain below ground they will never add to global warming, but carbon stored in vegetation is in the active soil-vegetation-atmosphere carbon cycle and is in constant risk of being released. While a reduction in industrial emissions is effectively a reduction in absolute, permanent emissions, any benefit from sequestering carbon in forests can quickly be reversed by fire, disease, or land-use changes.

Many of the major reversal risks are outside of the control of current governments, including political shifts leading to conservation policy reversals, export commodity price increases, or natural disasters. In Amazonia, the deforestation drivers include large-scale soy production, cattle ranching,

[12] Data for tree cover loss data (30% tree cover) and 2018 CO2e per hectare of native forest are from: Hansen, M. C., P. V. Potapov, R. Moore, M. Hancher, S. A. Turubanova, A. Tyukavina, D. Thau, S. V. Stehman, S. J. Goetz, T. R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C. O. Justice, and J. R. G. Townshend. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." Science 342 (15 November): 850–53. Data available on-line from: http://earthenginepartners.appspot.com/science-2013-global-forest and the Global Forest Watch on line data.

logging, hydroelectric dams, mining, oil drilling, and roads. Such lucrative activities have higher opportunity costs with which carbon-credit and offset markets cannot compete, given their low and volatile prices. This increases on-going pressures and the risks of reversals.

An effective REDD+ program is hard to carry out and requires consistent political will. Grants and other support can provide technical assistance and legitimacy for a government to carry out a program it wishes to enact. But if funds from offset sales are the main motivation for a REDD+ project or jurisdictional program, that program is bound to fail because of the incentive it creates to generate the maximum number of tradable credits even if they are of dubious environmental quality. The political will would not likely be sufficient for an effective program that preserves forests for the long run rather than just lowering emissions for a short period of time in exchange for offset-sales revenue.

Acre, Brazil has been the jurisdictional program considered most ready for linkage to California under the TFS; instead, it illustrates the problem of impermanence. After having significantly reduced its deforestation rates ten years ago, before the implementation of jurisdictional REDD+ projects financed by European governments, recent changes in the national and state policies and governments have lead to a substantial increase in deforestation rates in Acre. If a TFS program had started when it was first being negotiated, this rise would constitute a reversal requiring the replacement of credits.

The TFS has provisions to address such "reversals", mainly a buffer pool of 10 percent of locally-generated forest-carbon credits which could be used to replace credits that turn out to be invalid, but the buffer pool could quickly be swamped by the effects of natural disasters, tropical-commodity booms, or political pivots.

Otherwise, the TFS does little more than state that the jurisdictional program must address permanence. What recourse would a jurisdiction procuring the TFS credits have if a major reversal takes place that is greater than the credits remaining in the buffer pool? It would be up to that jurisdiction to replace with credits with others.

In sum, the proposed TFS does not adequately address the risks of over-crediting from leakage, reversals, and non-additional crediting. Even with best practice standards, assessing whether jurisdictions have met those standards requires subjective quality judgments based on a deep understanding of the forest sector applying the standard. History of international offsetting has demonstrated the willingness of purchasing and selling countries and third party verifiers to rule leniently to allow for the exchange of large volumes of low-quality credits. The type of monitoring that would be needed for California to ensure that TFS programs meet the intended quality standards is far more than ARB's current capacity in terms of numbers of staff, and the depth of knowledge of and connection within forest sectors around the world.

Most sincerely,

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