Addressing the Drivers of Emissions from Deforestation and Forest Degradation

Submission to the UNFCCC by Conservation International, Environmental Defense Fund, National Wildlife Federation, Royal Society for the Protection of Birds, The Nature Conservancy, Union of Concerned Scientists, and World Vision International

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Our organizations have long been involved in the UNFCCC discussions concerning REDD+, and in particular on the drivers of greenhouse gas emissions from deforestation and forest degradation (Boucher et al. 2011, Searchinger et al. 2011). We welcome the opportunity to give information and suggestions concerning the drivers of emissions from deforestation and forest degradation, which is fundamental to the success of REDD+.

Recommendations: Five Ls to address the drivers

The UNFCCC should recommend and support policies and approaches to address the drivers of greenhouse gas emissions from tropical deforestation and forest degradation (henceforth abbreviated simply as "drivers"). Doing so can increase the effectiveness of REDD+ policies, reduce leakage and improve reference level calculations.

A balanced package to address drivers should include five key elements: **Learning**, **Low emissions development strategies**, **Land use planning**, **Leakage prevention**, and **Legal production of commodities**. These **"5Ls"** of drivers policies should all be encouraged and supported by the UNFCCC.

Learning

In order to adequately address the drivers they must first be identified and assessed. Each country can participate in evaluating its role in driving deforestation and forest degradation. Furthermore, shared learning experiences such as technology transfer and

South-South partnerships may play a critical role in developing policies, approaches, and technologies to address the drivers. <u>The UNFCCC should support identification and assessment of drivers, and facilitate technology transfer and learning partnerships on drivers</u>.

Low emissions development strategies

As major economic sectors, drivers should be addressed comprehensively. Drivers approaches need to encompass multiple government agencies, not just those that appear to be directly related to forests. For example, ministries that determine development subsidies should be included in REDD+ strategies so that their approaches to promoting rural development are supporting, rather than undermining, efforts to reduce emissions from deforestation and forest degradation. <u>The UNFCCC should support the inclusion of drivers in REDD+ national strategies, including through international financing.</u>

Land use planning

Land use planning can be used to avoid agricultural development and expansion into forests and other ecosystems characterized by high levels of carbon and biodiversity. Instead, this approach can designate already-cleared and in particular, degraded lands for agricultural and timber expansion, as well as improve land use practices to increase output from current areas of production. Therefore, <u>the UNFCCC should support land use planning as part of national REDD+ strategies.</u>

Leakage prevention

Evaluating what are the major drivers and where they may move to can help predict where and how emissions leakage may occur when implementing REDD+. In order to achieve reductions that are additional at the global scale – the scale that matters to the atmosphere – countries should aim to create policies that reduce the drivers' impacts on forests domestically, rather than displacing them to forested areas in other countries. This will not only avoid leakage of these activities, but also be economically beneficial. Therefore, <u>comprehensive assessments of drivers and their potential movement internationally should be supported both by countries and by international organizations.</u>

Legal production

Illegal products are, by definition, unregulated. Without explicit action to prevent illegal logging and production of the goods that drive emissions from deforestation and forest degradation, it is likely that those activities will continue and expand in unmanageable ways. All countries – importers just as much as producers -- should take the steps necessary to stop illegal markets and support strict law enforcement. The UNFCCC should encourage international and domestic actions, including international agreements, to stop illegal production.

In general, REDD+ policies should address what can be done by all countries that produce, manufacture, and consume the goods that drive emissions. The markets for these products are global, and include both developed and developing countries – making addressing drivers the responsibility of all countries. Furthermore, the UNFCCC should promote incorporation of drivers policies into each phase of REDD+. Finally, actions that address the 5Ls must be financed in all phases of REDD+.

The drivers of deforestation and forest degradation emissions today

Agriculture is the largest global driver of deforestation emissions. Other important drivers of emissions include logging and mining, and all three of these drivers are often spurred by infrastructure development (Geist & Lambin 2002; Morton et al. 2006; Rudel 2007). In recent decades, commercial agriculture, supplying urbanizing populations and global commodity markets, has overtaken small-scale agricultural production to become the leading cause of agricultural expansion and of deforestation emissions in the tropics (DeFries et al. 2010; Rudel et al. 2009). Drivers of deforestation differ regionally; in Latin America, cattle ranching, and commercial crops such as soy, have been the leading drivers of deforestation (Morton et al. 2006, Macedo et al. 2012); in southeast Asia, expansion of oil palm and other tree plantations is the key driver of deforestation emissions while in Africa, where deforestation rates are considerably lower than in other

tropical regions, small-scale agriculture and charcoal production remain the leading driver (Fisher 2010).

The drivers of forest degradation include harvesting of products such as timber, fuelwood, fodder for livestock and plants for subsistence use or local sale, as well as a growing market for charcoal driven by urbanization (Herold et al. 2011).

An understanding of the key drivers of deforestation emissions is a prerequisite to identifying important actors and strategies that can relieve pressure for forest conversion as well as to encouraging these activities away from the forest frontier, and to supporting improved land management to reduce the need for additional land area. Knowledge of drivers can also help direct efforts towards the greatest sources of deforestation emissions. For example, 80% of Indonesia's carbon is stored in its peatlands. Oil palm in Indonesia is often cultivated on these drained and cleared peat swamps and the resulting emissions of carbon dioxide and methane per hectare are much larger than from non-peat areas (Wertz-Kanounnikoff, S. and M. Kongphan-Apirak. 2008, Saxon and Sheppard 2011).

The products that are the leading drivers -- palm oil, soy, timber, pulp, paper, beef and leather -- are global commodities with a growing demand from global markets. For example, the majority of soy grown in South America is exported to Europe and Asia. Export markets are spurring palm oil production in Southeast Asia and beef and leather in South America (COMTRADE 2012; Walker et al. 2009). Consumer nations therefore bear a responsibility for the emissions resulting from the products they import. Actions by consumer nations to reduce and prevent imports of products causing deforestation and forest degradation emissions can play an important role in encouraging "deforestation free" commodity production.

Identification of drivers of deforestation can result in markets agreeing not to source from recent deforestation. For example the soy moratorium in the Brazilian Amazon, initiated in 2006, resulted in lower deforestation for soy while production has increased through

increasing yields and expansion focused on already-cleared areas (Macedo et al. 2012, Rudorff et al. 2011)

Filling in the knowledge gaps

While the broad outlines of the forces driving deforestation are the subject of a substantial amount of scholarly literature (recently reviewed in Boucher et al. 2011), there are still substantial gaps in our knowledge. There is a considerable amount known concerning what were the drivers of deforestation and forest degradation in the twentieth century, and how these have changed in fundamental ways in the first decade of the twenty-first (Bongaarts 2009, DeFries et al. 2010, Fisher 2010). But it is still difficult to predict how the drivers will further develop and move around the globe in the next few decades. The concept of the forest transition (Meyfroidt et al. 2010) provides a sound theoretical basis, confirmed by data from many countries, to interpret the long-term global pattern of first increasing, then decreasing deforestation and forest degradation as societies develop. However it is of limited utility in predicting deforestation rates for a particular country over short time spans (a few decades or less), and thus does not currently provide a reliable basis for estimating REDD+ reference levels.

This means that, although using drivers in the adjustment of historical average emissions levels can help improve prediction of business-as-usual reference levels in the future, neither forest transition theory nor other models provide the basis for doing so as a general rule. Future research may improve this, but for the time being the burden of proof must be on those proposing such model-based adjustments, to show empirically that they do in fact improve predictions. The most common scientifically acceptable way to do this is through validation using past data; e.g. using deforestation rates from the 1990s and a model including drivers as variables, to predict deforestation rates from the 2000s. The predicted levels are then compared to the actual levels to evaluate the validity of the model. Without a validation process such as this, adjustment of historical averages based on drivers cannot be considered to be scientifically sound.

Recent growth in the production of the agricultural commodities that are the major drivers has come increasingly from gains in productivity rather than from expansion of cultivated area (Angelsen 2010, Macedo et al. 2012). This shows that continued agricultural growth is not dependent on future deforestation, but can come from technological progress as well as from putting already-cleared land into more sustainable kinds of production. The success of such private-sector efforts as the soy moratorium in Brazil in reducing deforestation indicates that business sectors can continue to expand their output and maintain their profitability without deforestation, and may voluntarily move to such paths in response to the actions of NGOs and governments (Rudorff et al. 2010, Macedo et al. 2012).

The details of how this can be done – the mix of increased productivity and expansion into already-cleared land, the regions and lands that are most suitable, and the policies, technologies and incentives that can make these changes happen – need to be worked out for particular commodities and for individual countries. There are quite considerable "yield gaps" between current and potential output for many kinds of crops and livestock in many regions (Licker et al. 2011), and research and knowledge-sharing can help close these gaps. While sector-specific studies within individual countries will be needed to identify both the best opportunities for increased productivity and the potential lands for low-carbon expansion, regional studies at sub-continental scales (e.g. the Amazon or Congo Basins) can provide very useful information and scenarios which national plans and activities could use as a basis for their REDD+ planning.

There is also an important role for socio-environmental and economic assessment at the global scale. This can start from the projected population growth of populations and their nutritional and development needs -- particular those of the poor. These can be compared to current production patterns and the economic forces that are likely to alter them in coming decades. Rather than simply projecting past development trends into the future, such studies should examine alternative paths of sustainable development. They should look for opportunities to change patterns of consumption, diet, production, land use and trade in directions that reduce emissions, preserve forests, promote sustainable

development and meet the fundamental human needs of all the world's people (Foley et al. 2011).

Approaches to addressing drivers

Learning

An understanding of the key drivers of deforestation emissions is a prerequisite to identifying strategies that can relieve pressure for forest conversion as well as important actors. All countries should evaluate the roles that they play in driving emissions from deforestation and forest degradation

In addition to requesting each party to identify its role in driving emissions from deforestation and forest degradation, the UNFCCC should encourage opportunities for international experience sharing about addressing drivers through technology transfer and south-south partnerships. Experiences with the 5Ls of drivers should be shared among all countries. For example, some current planning approaches may be useful in creating land use plans that address drivers. Furthermore, sharing of technology approaches, such as those that reduce food waste, may reduce global demand for the commodities that drive emissions from deforestation and forest degradation.

Low emissions development strategies

Low emissions development strategies provide a way for countries to continue growing economically while ensuring that those sectors that drive emissions from deforestation and forest degradation grow in a way that they no longer threaten forests. This process includes assessing the current situation, analyzing low emissions alternatives, and identifying policy aims, actions, and interventions to achieve low emissions goals (van Tilburg et al. 2011).

For REDD+ these strategies should include:
- Cross-ministerial coordination

- Working with the private sector to reach agreements that its expansion will not cause emissions from deforestation and forest degradation
- Inclusion of all relevant stakeholders in development of these strategies
- Integrating strategies into the UNFCCC and other international mechanisms

Capacity to engage in low emissions development strategies should be an integral aspect of Phase I REDD+. For countries, or as appropriate sub-national entities, the data collection and initial steps of creating low emissions development strategies will be a critical step in Phase 1 of REDD+, and funding should be provided for this activity. Because low emissions development strategies involve a continuous process of re-evaluation and re-prioritization, they should also be included in REDD+ Phases 2 and 3.

Governance reforms and creation of low emissions development strategies should be considered together, in order to improve efficiency and create synergies. Although the details of low emissions development strategies will be different in different countries, some approaches and experiences will be common among a variety of countries.

Assessment of cleared and in particular degraded land available for production, is an excellent example of an activity for low emissions development strategies. There are a number of scientific assessments of degraded lands, many of which suggest that those areas, rather than primary or high carbon secondary forests, can be productively used for producing the goods that have driven deforestation (i.e. Global Partnership on Forest Landscape Restoration, 2010). Countries should assess the role that these lands could play in developing their economies, while establishing policies that prevent the expansion of the agriculture and forestry sectors into primary and high carbon forests. This comprehensive approach would need all of the elements of a low emissions development strategy: data collection, intra- and inter-governmental coordination, stakeholder participation, business engagement, and policy development.

Leakage prevention

In a globalized world, economic and land-use changes in one country inevitably have impacts in many others. These impacts, transmitted through the global markets for agricultural and forest commodities, can come either from the direct movement of producers (e.g. timber companies) or indirectly – but just as strongly -- from changed economic pressures mediated by prices. The movement of commodity production away from countries adopting REDD+ policies into forests in other countries both nullifies any climate benefit, since the global emissions are what matters to global climate change, and creates a perverse incentive, punishing those countries that act most rapidly and effectively to reduce deforestation and forest degradation. Thus, leakage prevention, directed in particular towards the major drivers, must be a key element of global REDD+ policy.

Leakage prevention strategies should be focused on the drivers, and in particular at the multinational companies that produce and distribute the driver commodities, rather than on the countries that adopt REDD+ programs. These countries have little power to prevent economic shifts from their forests to those of their neighbors, and it is counterproductive to penalize them further if such shifts happen. Rather, incentives for other countries to discourage leakage toward their forests are both fairer and more likely to be effective.

Consuming countries can reinforce such incentives through their trade and procurement policies, so that leakage will not be economically rewarded. They should also recognize that in a global economy, it is not only the particular countries that provide them with commodities, but also the overall demand for those commodities that matters. Sourcing their imports from countries that have adopted effective REDD+ programs is helpful, but so is reducing their imports from those where deforestation and degradation continues unabated.

Land use planning

Directing the drivers away from forests requires land use planning, both to identify the forests under threat – which may often be only a small proportion of the total – and to indicate the alternative, non-forested areas toward which development should be directed. A general principle of land use planning in support of REDD+ should be to discourage development in forest frontier regions, and rather to encourage it in cleared and settled regions (which also tend to be those where markets and infrastructure already exist; Chomitz 2007). This geographic approach can guide many kinds of government policy, involving a variety of different ministries – e.g. road building, bank credit, agricultural extension, location of ports and other infrastructure, and land reform. By making production less costly and more profitable in non-forested regions, governments can reduce the economic incentive to deforest while continuing to promote sustainable development.

Both domestic and international financing will be necessary to develop these kinds of national land use plans. International financial institutions both need to fund their development, and then to take them into account in making decisions concerning where to finance the construction of roads, ports, dams and other infrastructure. The global explosion of geographic information and of the systems to collect and manage it, has made intelligent land use planning an inexpensive option to reduce the pressure for deforestation and forest degradation. Those making decisions on financing should consider land use planning as a fundamental element of REDD+ programs – one that multiplies the value of all the other elements.

At the national level and below, land use plans will need to incorporate information of several kinds. These include:
- The regions in which forests occur
- Within these, the regions in which substantial deforestation and/or forest degradation is taking place
- The commodities for which demand is driving deforestation and forest degradation

- The economic trends and pressures likely to guide the production and geographic mobility of those commodities in coming years (affecting their leakage potential)
- The areas where those commodities could be produced in non-forest regions
- The factors affecting the costs and productivity of those commodities in different regions, including those that can be changed by government policies (e.g. road building, subsidies)

The UNFCCC, other international organizations and the global community in general can play an important role in providing information, technical expertise and financial support for land use planning. Some information can most efficiently gathered, and analyses be done, at a multi-country or even global scale. Other kinds will have to be collected separately for each country, but even here the sources of that information may be outside the country of interest (e.g. remote sensing data on forests, deforestation, soils, climates, crop potential, etc.) Making such information freely available to all countries would be a cost-effective way to encourage land use planning in support of REDD+ and low carbon development strategies.

Legal production

In order to manage the sectors that drive emissions from deforestation and degradation, all production must be subject to governance. Therefore, as an implicitly unmanageable force, illegal production of these goods must be reduced and ended. Many steps can be taken to promote legal production, including encouraging the economic development of these sectors through low emissions development strategies.

All countries should participate in this effort. For example, there are indications that the efforts by consuming countries to increasingly close their markets to illegal wood have already had a beneficial effect (Lawson and MacFaul 2010).

Monitoring drivers

Monitoring will be needed to determine the drivers of emissions from deforestation and forest degradation, evaluate their impact, and create strategies for addressing them.

Spatial assessments can be especially useful for monitoring drivers. First, mapping can help predict leakage because not all products are profitable in all landscapes. Second, mapping is a critical component for land use planning and can help identify illegal activities. Finally, low emissions development strategies can use spatial monitoring data to predict and evaluate locally appropriate policy interventions and incentives. Therefore, spatially explicit monitoring tools should be developed and funded during phases 1 and 2.

Incorporating safeguards into drivers policies

Social, environmental, and governance safeguards apply to all activities during any phase of REDD+; therefore, they must also be considered while addressing drivers. Policies that will directly affect small-scale producers, for example, should be carefully assessed. These assessments could be guided by millennium development goal 1.C: "halve, between 1990 and 2015, the proportion of people who suffer from hunger." Because many of the drivers of deforestation are related to the global food trade, the need to feed the hungry should take precedence over other commodities, such as biofuels. Furthermore, efforts to address drivers should be used to complement, not threaten, local production.

Drivers as part of all phases of REDD+

All countries should engage in the 5Ls of drivers during all phases of REDD+. This may require financial and technical support and coordination that is specific for drivers. There are opportunities to address each of the 5Ls during each phase of REDD+, and doing so will likely increase its effectiveness.

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