Submission by Colombia to the Subsidiary Body for Scientific and Technological Advice (SBSTA) on Methodological issues under the Kyoto Protocol Land use, land-use change and forestry under Article 3 and 4, of the Kyoto Protocol and under the clean development mechanism (CDM)

October 2013

Context

Colombia welcomes the opportunity to provide views in response to the paragraph 5, FCCC/SBSTA/2013/L.5 on *specific possible additional LULUCF activities under the CDM and specific alternative approaches to addressing the risk of non-permanence under the CDM*, with a view to forwarding draft decisions on this matter to CMP 9.

Although the market for CERs from CDM projects is currently depressed, and purchases of CERs from non Least Developed Countries are facing restrictions, the CDM as a flexible mechanism still holds a lot of potential to incentivize clean development and mitigation actions in developing countries provided that sufficient demand for CERs is generated. This potential has been severely underutilized in the LULUCF sector due to the limitations on eligible activities for projects (afforestation and reforestation) and the non-permanent credits that these generate (tCER and lCERs).

Silvopastoral systems as a new activity in the CDM

Colombia has had successful experiences with silvopastoral systems (SPS) as a productive arrangement that yields significant sustainable development benefits, including greenhouse gas mitigation, as compared to traditional models of extensive cattle ranching. Nevertheless, upfront investments for conversion to SPS are high, so the inclusion of silvopastoral systems as an additional activity in the CDM would create additional incentives to stimulate a wider adoption of these systems.

Silvopastoral systems are a tool to convert extensive (i.e. open, treeless) and often degraded pastures into a richer and more productive environment, where trees and shrubs are planted or allowed to naturally regenerate interspersed among fodder crops such as grasses and leguminous herbs. The term SPS refers to cattle ranching arrangements that encompass a range of different agroforestry practices, including trees in pasture, 'living fences', fodder banks (concentrated areas of protein-rich fodder crops), grazed timber plantations and some non-timber forest trees such as rubber, all under an integrated management system. One type of SPS, known as intensive silvopastoral systems (ISPS) has proved particularly effective in tropical areas such as Colombia. ISPS consist of fodder shrubs planted at high densities, intercropped with improved, highly-productive pastures and timber trees, all combined in a system that can be directly grazed by cattle.

For a country like Colombia, whose definition of forest uses the upper thresholds allowed under the CDM of a minimum area of land of 1 hectare, with a crown cover or more than 30% and trees able to reach a minimum height of 5 meters at maturity in situ, silvopastoral systems can be classified within the *Grazing Land Management* activity, following the Kyoto Protocol reporting categories. IPCC AFOLU 2006 guidelines and methodologies approved under voluntary standards can be refined to develop appropriate CDM methodologies for silvopastoral systems.

Additionally, Colombia welcomes the consideration of other activities for inclusion in the CDM as have been proposed by several parties, such as revegetation, particularly in degraded lands, and agroforestry.

Mitigation benefits of silvopastoral systems

SPS have a large potential for mitigation of greenhouse gas (GHG) emissions due to: improved capacity to store and sequester carbon in the soil and in the above ground woody biomass; higher retention of nitrogen and phosphorous, and thus, fewer applications of nitrogen-based synthetic fertilizers (urea and others) through the use of leguminous forage; reduced use of fire as a pasture management tool; and improved options for animal nutrition aiming at reduced gaseous losses from enteric fermentation. Methane emission reductions have been estimated at 21% and nitrous oxide emission reductions at 36%)[1]. Carbon removals have been estimated at between 1.2 and 4.5 C tonnes/ha/year for SPS pastures (depending on tree density and agroecological zones) as a result of the increase in Carbon stocks in soils and biomass[2].
Additionally, SSP may provide mitigation benefits through restoration of degraded grasslands, and reduction of land use change (deforestation) due to cattle intensification.[3]

Sustainable development cobenefits

Past silvopastoral projects have demonstrated delivery of a range of wider benefits, such as:
Land improvement: An increased carbon sequestration rate increases organic matter content, thus the nutrient absorption and water retention capacity. In SPS systems in Colombia, Costa Rica and Nicaragua, mean soil erosion was reduced by almost 50% between 2002 and 2007 (from 80.9 to

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[1] World Bank. 2008 Colombia, Costa Rica and Nicaragua, Integrated Silvopastoral Approaches to Ecosystem Management Project. Implementation Completion and Results Report. Environmentally and Socially Sustainable Development, Central American Department Latin America and Caribbean Region.

[2] Ibrahim M., Guerra L., Casasola F., Neely C. 2010. Importance of silvopastoral systems for mitigation of climate change and harnessing of environmental benefits. In: Abberton M., Conant R., Batello C. (eds). Grassland carbon sequestration: management, policy and economics: Proceedings of the role of grassland carbon sequestration in the mitigation of climate change. Integrated Crop Management Vol 11. FAO Rome.

[3] Ibrahim, M., F. Casasola, C. Villanueva, E. Murgueitio, E. Rámirez, J. Sáenz. 2010. Payment for environmental services as a tool to encourage the adoption of silvopastoral systems and restoration of agricultural landscapes dominated by cattle in Latin America.

44.1 tonnes/ha/yr). The use of agrochemicals, mainly herbicides, also decrease on average by 40% in participating farms.[1]

Farm productivity: Various studies indicate that beef and milk production increase as stocking rates and animal conditions improve, and costs related to fertilizer and herbicide use decrease. This improves profitability of farms.[4]

Biodiversity conservation: at a landscape level in tropical settings, SPS provide more ecosystem services than open pasturelands[5]. They favor biodiversity by creating complex habitats that support diverse plants and animals[6], harbor a richer soil biota, and increase connectivity between forest fragments[7]. By providing timber, they may reduce logging pressures on native forests.

Water quality: SPS have positive effects on the quality of water, reducing contamination and sedimentation levels, and may reduce water footprint (Ríos et al., 2012)[8]

Reduced external carbon footprint: SPS can reduce life-cycle CO_2 emissions from fertilizer and feed production per kg of beef and milk produced.[9]

Climate change adaptation: Higher contents of organic matter in the soil increase nutrient absorption and water retention rates. In dry periods arboreal species and legumes often have still high quality forages. Areas of SPS are often more resilient to droughts. For instance,shade from SPS systems reduces ground temperature, favoring water conservation during extreme dry and hot periods.

Non-permanece in silvopastoral systems

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[4] Villanueva, L. G., J. C. Meza, y S. D. Hernández. 2010. Efecto de la cobertura arbórea sobre la producción de pastos en un sistema silvopastoril Teapa, Tabasco. Tópicos Selectos en Agron. Trop. 1: 155-164.

[5] Calle, A., Montagnini, F., Zuluaga, A.F., 2009. Farmers' perceptions of silvopastoral system promotion in Quindío, Colombia. Bois et forets des tropiques 300 (2), 79–94; Buttler, A., Kohler, F., Gillet, F., 2009. The Swiss mountain wooded pastures: patterns and processes. In: Rigueiro-Rodríguez, A., McAdam, J., Mosquera-Losada, M.R. (Eds.), Agroforestry in Europe. Springer, pp. 377–396.

[6] McAdam, J.H., McEvoy, P.M., 2009. The potential for silvopastoralism to enhance biodiversity on grassland farms in Ireland. En: Rigueiro-Rodríguez, A., McAdam, J., Mosquera-Losada, M.R. (Eds.), Agroforestry in Europe. Springer, pp. 343–356;

Castro, M., 2009. Silvopastoral systems in Portugal: current status and future prospects. In: Rigueiro-Rodríguez, A., McAdam, J., Mosquera-Losada, M.R. (Eds.), Agroforestry in Europe. Springer, pp. 111–126.

[7] Rice, R.A., Greenberg, R., 2004. Silvopastoral systems: ecological and socioeconomic benefits and migratory bird conservation. En: Schroth, G., da Fonseca, G.A.B., Harvey, C.A., Gascon, C., Vasconcelos, H.L., Izac, A.M. (Eds.), Agroforestry and Biodiversity Conservation in Tropical Landscapes. Island Press, Washington, pp. 453–472;

Ibrahim, M., Villanueva, C., Casasola, F., Rojas, J., 2006. Sistemas silvopastoriles como una herramienta para el mejoramiento de la productividad y restauración de la integridad ecológica de paisajes ganaderos. Pastos y Forrajes 29 (4), 383.

[8] Ríos, N.; Lanuza, E.; Gámez, B. Montoya, A.; Díaz, A.; Sepúlveda, C.; Ibrahim, M. 2012. Cálculo de la huella hídrica de la producción de un litro de leche en fincas ganaderas en Jinotega y Matiguás, Nicaragua.

[9] Ibrahim, M.; Tobar, D.; Guerra, L.; Sepulveda, C.; Ríos, N. 2010. Determinación del balance de gases efecto invernadero en fincas ganaderas de la región Chorotega, Costa Rica como elemento de referencia para mejorar la competitividad. Resúmenes VI Congreso Internacional de Agroforestería para la Producción Pecuaria Sostenible.

Silvopastoral systems can generate permanent emission reductions in nitrous oxide emissions from fertilizers, methane emissions from enteric fermentation. Additionally, there can be permanent emission reductions of methane and nitrous oxide from waste if managed with composting or biogas. Carbon removals through tree cropping are subject to non-permanence risks as A/R activities, but here they represent only a portion of the emission reductions generated by SPS systems.

Alternative approaches to address non-permanence

Since 2002, Colombia has 24 CDM projects in the forestry sector. Of these, only 6 have achieved international registration. It is widely known that the temporary crediting system with tCERs and lCERs, although developed as a solution to address permanence for LULUCF activities in the CDM, has led to reduced demand and lower market prices than permanent credits; reducing incentives for both project developers and buyers.

Colombia recognizes that several possibilities exist to address the risk of non-permanence and that host countries and project developers should be able to choose the most suitable approach to non-permanence. These alternative approaches should be flexible to prevent LULUCF activities to become more cumbersome under the CDM.

For Colombia, the most transparent alternative is the tonne-year crediting approach, whereby permanent credits are issued incrementally only after fulfilling the permanence requirement of offsetting the global warming potential of a tonne of CO_2e. The proportion of credits issued depends on the length of permanence period and project period, and monitoring times should be different depending on the type of activity. However, acknowledging that for this approach carbon revenue takes longer to provide returns on investment, buffers and insurance are additional alternative approaches that should also be allowed, in addition to the currently existing temporary crediting approaches.

Consideration by SBSTA 39

Colombia requests the SBSTA 39 to deliberate on the inclusion of specific additional LULUCF activities and specific alternative approaches to address non-permanence under the CDM as proposed by Parties, with a view to recommend a suite of activities, including silvopastoral systems; and a suite of approaches, including tonne-year crediting; for approval by CMP.9.