Info Note

Making trees count in Latin America and the Caribbean

Measurement, reporting and verification (MRV) of agroforestry in the UNFCCC

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Key messages

- About one-third of countries in Latin America express an intent to use agroforestry to meet national climate commitments.

- Despite this interest, technical and institutional barriers often prevent agroforestry from being represented and counted in United Nations Framework Convention on Climate Change (UNFCCC) MRV processes such as national greenhouse gas (GHG) inventories and REDD+.

- The fact that agroforestry often isn't counted in MRV systems has serious implications. Only if agroforestry resources can be properly measured and reported will they gain access to finance and other support, and thereby assume a prominent role as a response to climate change.

- Countries in the Americas that have found ways to make agroforestry visible in MRV have coordinated institutional environments, improved technical capacity in land use classification and tracking, and developed programs such as NAMAs to direct attention and resources to the issue.

MRV of agroforestry under the UNFCCC

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) must submit national GHG inventories, as well as information on their adaptation and mitigation efforts. These inventories include sources of GHG emissions as well as efforts to promote forests and other "sinks" that remove carbon from the atmosphere. Countries must establish MRV systems to quantify emission reductions and other impacts for specific GHG mitigation actions, such as Reducing Emissions from Deforestation and forest Degradation (REDD+) and nationally appropriate mitigation actions (NAMAs).

Most MRV systems, however, have not been designed to include agroforestry. This absence has serious implications. If such trees aren't counted in MRV systems, then in many ways they don't count: only if agroforestry resources are measured, reported and verified will they gain access to sources of funding and other support they need to effectively contribute to each nation's response to climate change. Improved, robust MRV is critical to the future of agroforestry in climate change mitigation and adaptation. Here we report on a first appraisal of agroforestry in MRV systems under the UNFCCC as it pertains to Latin America and the Caribbean, with a focus on national inventories, REDD+ and NAMAs. We examine attempts by countries to monitor and report on agroforestry, the barriers they have encountered, and the ways they have sought to overcome these challenges.

Figure 1. A multi-strata shade coffee agroforestry system in Nicaragua. Photo credit: ICRAF.

Agroforestry ambitions in the Americas

We closely examined country submissions of national communications (NCs), nationally determined contributions (NDCs), REDD+ strategies and NAMAs for developing countries throughout Latin America and the Caribbean. The study included NCs and NDCs of 34 countries, REDD+ strategies for 23 countries, and all NAMAs listed in global databases. Countries whose documents made explicit references to agroforestry, or that mentioned related topics such as wood fuel, were judged to have an interest in agroforestry.

Our analysis shows that many countries recognize the potential of agroforestry and have integrated it into national policy for both adaptation and mitigation. Among Latin American and Caribbean countries, 26% explicitly propose agroforestry as a solution in their NDCs, slightly lower than the global figure for developing countries (40%). Four of the seven countries that have registered agroforestry-based NAMAs are in Latin America or the Caribbean (Costa Rica, Colombia and the Dominican Republic). Among countries in the region, 75% included agroforestry in their REDD+ efforts as a response strategy for deforestation and forest degradation. El Salvador, Honduras, Nicaragua, Panama, Paraguay, Peru and Uruguay all have past or ongoing policies promoting agroforestry. In short, our review of official UNFCCC documents revealed significant interest in agroforestry among Latin American and Caribbean nations (Table 1).

Table 1. *Ambitions of Latin American and Caribbean countries to use agroforestry, based on review of UNFCCC documents.*

UNFCCC MRV system documentatation	Number of documents reviewed	Number that mention agroforestry (%)	Global No (%)
National communications (NCs)	34	20 (59)	40
Nationally determined contributions (NDCs)	34	9 (26)	40
Reducing Emissions from Deforestation and Forest Degradation (REDD+)	20	15 (75)	50
Nationally appropriate mitigation actions (NAMAs)	-	4	10

Countries signal their future climate actions through NDCs. How these documents discuss agroforestry, therefore, can reveal how—or whether—they will track agroforestry in their future MRV efforts. In the nine NDCs of Latin American and Caribbean nations, agroforestry was most often discussed in the most general terms—with references simply to 'agroforestry'—but there were also a few mentions of specific types of agroforestry, including silviculture, pastoral systems and woodlots.

Agroforestry in UNFCCC MRV

This strong interest, however, has not translated into solid visibility for agroforestry in MRV systems. According to the IPCC 1996 Good Practice Guidelines for Land Use, Land Use Change and Forestry, land use is reported using six classes: forest, rangelands, settlements, wetlands, croplands and other lands. However, because agroforestry occurs on all of these six classes of land use, for agroforestry to be represented in the inventories, countries would need to report subcategories for each. Of the 20 countries explicitly mentioning agroforestry in their inventories, only 10 report subcategories. As a result, even if agroforestry had been quantified, the failure to report subcategories means it would not appear explicitly in the NCs. With the countries that don't report subcategories, it is not possible to see whether agroforestry is represented in their national inventories.

Logistical challenges may limit the representation (and use) of agroforestry under REDD+ as well. REDD+ implementation hinges on the concept (and definition) of forest. Each country makes its own decisions regarding minimum area, tree height, canopy cover and species/ecosystems. What is forest in one country may not be forest in other. Among Latin America and Caribbean REDD+ countries, 10 have submitted the Forest Reference Emission Levels (FRELs) that outline their forest definitions. Minimum canopy cover ranges from 10 to 40 percent, with six countries (Belize, Brazil, Chile, Honduras, Mexico, and Paraguay) setting the lowest level. This would seemingly provide an opportunity to include agroforestry, which often easily exceeds this level, in MRV. No countries in Latin America explicitly include agroforestry in their REDD+ forest definitions, although El Salvador has expressed interest in doing so in the future. More commonly, REDD+ forest definitions explicitly exclude agroforestry. Belize excludes not only agroforestry but also urban parks and tree assemblages planted for non-wood products. Brazil and Mexico exclude forests on agricultural land and in urban areas. Colombia excludes forest plantations, palm crops and planted trees for agriculture. Paraguay excludes agroforestry, silvopastoral systems, and trees in urban areas. In such countries, carbon stock changes on lands not defined as forests are not captured in REDD+ MRV systems. These exclusions would mean that agroforestry would not be measured against REDD+ goals, a situation that presumably decreases incentives to use agroforestry as an intervention.

Much of the climate action in Latin America and Caribbean is taking place in the development of NAMAs. NAMAs are new vehicles for climate investment in sectors ranging from agriculture to energy. A search of NAMA databases yielded 274 NAMAs from 66 developing

countries, including 99 from Latin America. Of those 99, 13 were from the agricultural sector, and four mentioned agroforestry. Costa Rica had one NAMA that mentioned hedgerows and silvopastoral systems, and another noting coffee agroforestry. A NAMA from Colombia also mentioned silvopastoral systems, while one from the Dominican Republic mentioned agroforestry systems generally. These efforts are in the early stages: Colombia's NAMA is still seeking support for implementation, while the Dominican Republic's has not yet been submitted. Costa Rica's coffee NAMA, which aims to support the production and processing of low-emission coffee, has progressed further. It is currently being funded by a NAMA Support Project (NSP) through the NAMA Facility. Monitoring for the project includes indicators related to GHG emissions in coffee production and processing, as well as forest cover per ha of coffee. The coffee NAMA in Costa Rica is not linked to national MRV, which may cause asymmetry in reporting. Indeed, many implementation-project MRV systems are not linked to national systems, causing challenges in tracking. Colombia's emerging system, 'RENARE', is one of the few that help merge project and national efforts on MRV, and it may offer lessons in the future.

In short, agroforestry is both everywhere (on all land uses) and nowhere (poorly represented) in MRV. This situation means that there are many opportunities to improve MRV of agroforestry.

Paths forward

As our GHG inventory analysis and Costa Rica's coffee NAMA show, agroforestry is not completely absent from current MRV systems. Overall, however, MRV of agroforestry requires significant improvement. Latin American countries have made progress on this front, and their experience offers guidance to improving MRV of agroforestry elsewhere in the region and around the globe.

Part of the solution is technical. Interviews in Chile and Peru indicated that improving the availability of high-resolution satellite imagery would make it more likely that agroforestry would be included in GHG inventories. The experience of Colombia bears out that view. In that country, creation of a time series for land-use transitions was a significant step forward in the inventory process. It enabled the country to move from simple reporting of annual land-use classes to a land-use transition matrix, and it also highlighted where significant uncertainties remain, thus providing the basis for future MRV improvements. Other countries reported that the use of higher-resolution satellite imagery has improved their ability to identify trees that are growing in small patches or scattered across the landscape. Such imaging may also improve the ability to clearly identify different types of agroforestry systems, which can help quantify changes in

carbon stocks. In areas where satellite images show that trees meet specified criteria for forests (e.g., for patch size or crown cover), agroforestry may be included in analysis along with other forms of forest.

Although satellite imaging shows great promise, it often provides only limited information on forest types and other aspects of land use. The imaging information, however, can be fruitfully supplemented with statistical reporting systems. Informants in Chile and Peru indicated that GHG inventories could be improved by the inclusion of agroforestry in regular statistical reporting and the use of multiple data sources for different types of forest. Where vegetation map layers are overlaid on land-use maps, trees or shrubs growing outside administratively defined forests (such as on croplands or in settlements) may be a clearly distinguishable category of tree cover. Where existing satellite imagery analysis has been conducted only for areas defined as forests, alternative information sources may be used to provide information on trees in other land-use types, such as croplands. For example, Chile's GHG inventory uses information on fruit-tree orchards collected by the Natural Resources Information Centre primarily to support the horticulture industry. Bolivia has used information contained in academic theses to estimate carbon from trees not growing in forests, and has put in place collaborative arrangements between GHG inventory compilers and educational institutions. Such inclusive inventory methods can bear fruit. Nicaragua, for instance, determined that agroforestry—in the form of coffee, cocoa, orchards and trees in silvopastoral systems and in cities—cover more than 6 percent of the country's land mass.

A supportive institutional environment is also crucial. According to interviews conducted in Bolivia, Peru and Colombia, GHG inventories are more likely to include agroforestry if there is multi-institution coordination around land use, as well as a supportive legal and policy environment. Interviews in Bolivia and Peru suggested that collaboration among researchers not only within a single country but also across the wider region can lead to inventory improvement.

Political interest can be sparked by highlighting that the benefits of counting agroforestry in MRV include not only climate change mitigation and adaptation but also fighting land degradation, preserving biodiversity and improving people's livelihoods. In Peru and Colombia, inventory improvements have been facilitated by the involvement of diverse stakeholders—including farmer and producer groups as well as researchers—in developing NAMAs and by the focus on low-emission development encouraged by the NDCs. Better institutional coordination could also solve many of the definitional problems that plague MRV of agroforestry. If government ministries responsible for agriculture, forests and climate change work together, they would be more likely to recognize the

benefits of agroforestry and adjust the national forest definitions to include it.

Financial constraints also must be overcome. Several countries cited the cost as an obstacle to using high-resolution images. And a lack of money to sustain human and institutional capacity—especially after specific projects come to an end—can hamper MRV efforts, as was the case in Saint Lucia. Increased and sustained funding for MRV activities is needed to support countries as they work to meet their national ambitions and international commitments.

Overall, many countries in Latin America struggle with design and implementation of MRV systems. There is limited practical experience of MRV in general and specifically for agroforestry. The successes in Colombia and elsewhere highlight the need for sharing effective experiences of scaling up. These experiences reveal opportunities for meeting the urgent need for explicit representation of agroforestry in MRV systems so that the contribution of agroforestry to climate goals can be properly recognized and rewarded. Below are four priority actions that would improve MRV of agroforestry in Latin America and Caribbean countries.

■ *Develop accessible approaches for representation of lands with agroforestry.* Costs, time, capacity and complexity stand in the way of countries including agroforestry in MRV consistently and comprehensively. Development of cost-effective ways to represent lands with agroforestry is essential.

■ *Create guidelines for reporting to improve transparency. We* found that even if agroforestry was quantified, it would not have been visible in the national communication. This represent a missed opportunity for tracking contributions of agroforestry. Better guidelines could solve this problem and ensure that agroforestry is properly reported.

■ *Build capacity at the regional level.* In terms of capacity and challenges, clear regional patterns emerged from this assessment. Regional approaches to capacity building may yield opportunities for South-South learning. Building on regional platforms such as the Regional Low Emissions Development (LEDs)

platforms and integrating with other monitoring and evaluation needs can help mainstream the lessons learned for agroforestry in a cost-effective way.

■ *Research and practical guidelines on linking national and project-level MRV.* While agroforestry is rarely visible in MRV at the national level, project-level applications are prevalent. Work is needed to ensure that the two work together in ways that reduce transaction costs, build trust and share benefits. With the increase in funding to climate responses (such as through the Green Climate Fund), alignment of goals and tools for integration is paramount.

Further reading

■ Ahmed A. 2005. Comparing food and cash incentives for school in Bangladesh. Washington, DC: International Food Policy Research Institute (IFPRI). http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/48007

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