

منظمة  
الأغذية والزراعة  
للأمم المتحدة

联合国  
粮食及  
农业组织

Food and Agriculture  
Organization of the  
United Nations



Organisation des  
Nations Unies pour  
l'alimentation et  
l'agriculture

Продовольственная и  
сельскохозяйственная  
организация  
Объединенных Наций

Organización de las  
Naciones Unidas para la  
Agricultura y la  
Alimentación

## LATIN AMERICA AND CARIBBEAN FORESTRY COMMISSION

### TWENTY-SIX SESSION

Guatemala City, Guatemala, 24 – 28 May, 2010

## INFORMATION OF FOREST RESOURCES WITH EMPHASIS TO NATIONAL FOREST INVENTORIES

### Secretariat Note

#### Introduction

1. The level of information on the status of forest resources in the Region is insufficient to meet current demands. In most cases the information is very general or very scattered, making it difficult to make a real assessment of the forestry sector. The available information is not updated or its compilation procedure is unknown, making it impossible to accurately and reliably show changes in the dynamics of forest resource management in the Region. This highlights the need to establish and strengthen forest information centers in the countries, and to develop systems and tools for regional consolidation and analysis of such information.
2. The countries of the Region recognize this need and are willing to update their information on forest resources, not only to advance national processes on forest policies and legislation for sustainable forest management, but also to meet requirements for information from international processes and participate in mechanisms related to the mitigation of climate change through reducing carbon emissions from deforestation and forest degradation. Countries also recognize the need for adequate and updated information regarding the multiple benefits of forests and their contribution to the development and welfare of those living or benefiting from the forests and the community in general. Updating the information on forests requires new methodologies that combine remote sensing and field sampling, in order to adapt to information needs, including aspects related to biodiversity, carbon storage and other services of the forests.
3. In Mesoamerica, most countries have a relatively updated national forest inventory (NFI), allowing them to make decisions about forest and territorial management and planning. These inventories are undoubtedly an important step forward in possessing all necessary information on forest resources and providing relevant information for international processes and negotiations. However, international negotiations relating to mitigation and adaptation to climate change and reducing carbon emissions from deforestation and forest degradation (REDD) require more detailed information, making it necessary to have access to updated information, using new methodologies to obtain the required level of accuracy.
4. The countries of the Region also participate in the FAO Programme for Global Forest Resources Assessment (FRA), which is now publishing its latest update for 2010.

For reasons of economy, this document is produced in a limited number of copies. Delegates and observers are kindly requested to bring it to the meetings and to refrain from asking for additional copies, unless strictly indispensable.

Most FAO meeting documents are available on Internet at [www.fao.org](http://www.fao.org)

5. The effective monitoring of forest resources and reporting of information is now essential to assessing trends and perspectives in the forest sector. Timely, reliable and easily accessible information on forestry activities serve as the basis for the development of policies to promote domestic and foreign investment in the forestry sector and in particular to address the challenges of mitigation and adaptation to climate change and reducing greenhouse gas emissions more effectively.

6. Countries of the Region recognize the important support of FAO in the implementation of national forest inventories.

#### **Relevance of the issue at regional and sub-regional level**

7. The importance of the information on forest resources in Latin America is recognized by various public and private institutions responsible for implementing sustainable forest management. Institutions that provide public information in their countries, especially those in the forestry sector, cope with an increasingly complex and demanding scenario. The lack of up-to-date information for decision-makers in the countries of the Region has had a negative impact, leading to the degradation of natural ecosystems. There is a latent weakness in forest planning processes on various levels, namely national, subregional and regional levels, in part due to the availability of only partial or unreliable information, or due to a simple lack of information.

8. The discussion on mechanisms to mitigate the impact of climate change and the recognition of forests as a key element in carbon sequestration and storage, have placed them at the center of the environmental discussion and have generated significant opportunities for the forestry sector. However, to enable countries to benefit from the funding for different mechanisms such as REDD+, it is necessary to have the tools that can be used to demonstrate that deforestation and degradation of forests is being reduced. Therefore, it is necessary to improve measurement, reporting and verification systems.

9. Latin America and the Caribbean has the highest proportion of forest area, about 22% (FAO, 2009) and represents a significant part of the world's biological diversity. This fact provides important funding opportunities for forest conservation and reduction of greenhouse gas emissions. Similarly, the veracity of reports on changes in forest cover and the amount of stored carbon should be guaranteed. Moreover, given that forests not only store carbon, but also generate a number of other economic and environmental benefits, it is necessary to continue gathering information on certain economic and social issues in order to be able to improve public policy and forestry legislation, in addition to facilitating the management and implementation of sustainable rural development projects that support the conservation of natural ecosystems.

10. The need for information in the forestry sector has resulted in new challenges with regard to methodologies and technologies that provide accurate information and greater access to users at different levels. National and international institutions, private companies, scientists, students, and the public in general demand broad relevant coverage, and regular and reliable information from a scientific standpoint; it is therefore necessary to have good information management and transfer capabilities through computer assisted systems and internet platforms.

#### **Major developments at regional and sub-regional level**

##### National Forest Inventory

11. Over the last three decades Latin American countries have undergone significant changes in the management of their forest resources. However, progress towards sustainable forest management has been hampered by the lack of reliable and up-to-date information for use in decision-making. Since the 80s remote sensing technologies have been more readily available and most countries in the Region have maps of forests or vegetation cover and maps of ecosystems prepared based on interpretation of digital data and satellite imagery. However, in general, the information produced up to now is restricted to forest cover, commercial timber volumes and changes in land use.

12. The use of remote sensing techniques although playing a key role in the assessment and monitoring of forest resources, still have some limitations. Therefore, they should be combined with field measurements to obtain reliable information with the level of detail required by current processes.

13. Half of the countries of the Region report having good or very good remote sensing capabilities, while 30% report having good forest inventories. However, only five countries (17%) have at least a field survey covering the entire nation (FAO, 2010).

14. In Central America, FAO has assisted countries in the assessment of their forest resources and now most of them have updated National Forest Inventories (NFI) which supports decision-making on forest and management planning.

15. Costa Rica was the FAO pilot country for the development of a national methodology that could be applied to other countries. FAO also assisted Guatemala in 2003, Honduras in 2006 and Nicaragua in 2008. Several countries in the Mesoamerican sub-region have been unsuccessful in updating their inventory due to funding constraints, as well as other difficulties. In Mexico, the national forest inventory was conducted between 2004 and 2006 using field sampling and remote sensing. It is the only country where the inventory process is comprehensive.

16. Several countries have initiated processes to complete forest inventories with field surveys. The most advanced are Brazil and Ecuador. Both Brazil and Ecuador are working on a methodology to meet with REDD+ as required by the IPCC as part of the convention on climate change and, at the same time, to obtain other relevant information for decision-making on forest management and the development of policies related to the multiple benefits of forests and institutional and management issues. Within the UN-REDD Programme, Panama, Bolivia and Paraguay will soon be starting their national forest inventories with integrated remote sensing and field sampling technology. Other countries that have formulated their projects are Peru and Uruguay. Most countries have a clear need to improve information on their forest resources, so other countries must certainly be in the process of defining their projects.

### Forest monitoring systems

17. The forest monitoring consists of the periodic compilation of data to produce up-to-date information on the status of forest resources. This process is being carried out in several countries of the Region, utilizing remote sensing systems. In the Region, forest monitoring is limited to updating data on forest or vegetation cover, and does not include periodical quantitative information on biomass volumes or information on forest benefits, such as product use trends or land trends.

18. Some countries have technology of a sufficiently high standard for remote sensor monitoring. Among these are Argentina, Brazil, Chile, Ecuador, Mexico and Panama. Other countries such as Guatemala, Costa Rica and the Dominican Republic, have some good information from different years but their processes are not clearly established as activities of their forestry or environmental institutions, but as a result of individual projects from certain years. For most countries this process is limited by financial constraints, access to remote sensing resources on specific dates or technical problems such as cloud cover.



19. It is important for countries to be able to generate, use and report reliable data on forest biomass demands and carbon emissions caused by deforestation. This implies the need for exhaustive monitoring of changes in land use, especially changes from forest lands to other uses. Thus, it is essential the use of satellite data and imagery. There are currently several institutions that provide or facilitate access to satellite data, and in the Region there are two institutions that provide resources, tools and training, the National Institute for Space Research (INPE) in Brazil and the Water Centre for the Humid Tropics of Latin America and the Caribbean (CATHALAC) in Panama. There is a

collaboration agreement between FAO and the INPE to support countries in developing natural resource monitoring systems through the use of remote sensing technology.

20. Mexico has an integrated monitoring system with information from remote sensors and field monitoring, operational since 2004. The first complete report on the inventory was published for the period 2004-2007, and the 2009-2013 period is currently under investigation. The country's forest cover changes are assessed annually.

21. Countries in Central America which have already published their first national forest inventory are making efforts to establish monitoring systems. The main problems are the lack of institutionalized processes and financial resources. Costa Rica, Guatemala, Honduras and Nicaragua are in the process of establishing monitoring systems.

#### Forestry information systems

22. Timely and up-to-date information is essential to decision-makers and for this reason efforts are being made in the Region to systematize information on forest resources. Revision of the systems in several countries, has shown that there are differences in type and level of information. To aid this description the systems were classified into three types: i) documentary, ii) forest management, and iii) national forest inventories.

23. Documentary information systems: most government institutions responsible for agriculture, forests and environment have documentation centers that are important for compiling and distributing information and knowledge. In many cases the website of a country's Forest Service may contain a selection of this documentation, and in other cases, there are independent web pages such as the Forest Resources Information System (SIREFOR) in Costa Rica.

24. Forest management systems: these systems compile information on forest resource management operations such as management plans, annual operational plans, transport guides, reforestation, among others. Several countries of the Region have access to these systems and in some cases they are in the process of updating them; for example, in Nicaragua and Ecuador. This category also includes the National Forest Statistics System (SIFGUA) in Guatemala, which is in fact broader in scope as it also includes information on deforestation, industrialization, commerce and markets.

25. National Forest Inventory (NFI) data systems: several countries of the Region have national forest inventories based on remote sensing and field sampling, with information from Geographical Information Systems and virtual archives which can be accessed by specific users. Countries with such systems are Brazil, Argentina, Chile, Mexico and Panama. Five countries in Mesoamerica which have inventories also have systems to administrate data from measurement, observations and interviews, when necessary. In the case of Mexico, information from the national forest inventory and vegetation charts can be consulted online on the website of the National Forest Commission (CONAFOR).

26. This information must be made available to two types of users: firstly, those who are capable of processing and analyzing the data, such as researchers and consultants, and secondly, those who need the information, such as decision-makers. One of the problems seen in countries of the Region is the lack of analysis and distribution of information among both types of users. Strategies for information dissemination, need to be formulated on most countries.

27. Another relevant issue is the integration of information on a regional and sub-regional level. Although there are cases of significant sub-regional economic integration and commercial treaties, with the exception of the countries of the Amazon Treaty Cooperation Organization (ATCO), there are no collaboration agreements for the integration of forestry information, especially between countries with cross-border biomass.

### Institutions for the improvement of the state of information on forest resources

28. The forestry institutions of the Region have been submitted to modernization and adaptation, with different results. Many face difficulties in terms of budgeting, investment funds, personnel, materials and work teams; factors that limit their role in controlling forestry activities and their own institutional development.

29. In addition to the technical difficulties involved in periodically compiling information, it is important to highlight the institutional and financial limitations. In many countries, there are policies and laws that make it obligatory to monitor forest resources, but the institutions do not always spend their resources to enforce them. Mexico and Nicaragua, on a Mesoamerican level, are the two countries that are best placed to maintain continuous monitoring systems and national forest inventories. As part of the REDD mechanism there exists the possibility of obtaining long-term sources of financing, but the mechanism will not work if the institutions in charge of climate change and conservation and sustainable management do not work together at national level.

### Information needs for policies, legislation and national forest programmes

30. With regard to the issue of forestry policies and legislation, many countries of the Region have developed and updated their legislation in order to promote the principles of sustainability in forest management. As mentioned above, one of the difficulties of this process has been the lack of updated information on the forestry sector, which impedes development of processes in line with the status of resources and their beneficiaries.

31. FAO has provided technical assistance to countries with the aim of organizing policies, legislations and national forest programmes (NFP) for the improvement of the institutional profile of the forest management in the countries. In addition, one of the main bases of the National Forest Monitoring and Assessment Programme (NFMA) is the *generation of information to respond to national needs and to aid decision-making*. Thus, the forest inventories of the Mesoamerican countries have been multipurpose, that is, they have considered biophysical, socioeconomic and environmental variables, providing information on the multiple benefits of the forests as well as socioeconomic information including issues with regard to production and users. The collected data was based on the information needs of the development and assessment of policies, legislation and decision-making.

32. In some countries there is evidence of the need to change national inventories in order that they truly respond to information demands on the level of local and sub-national management. This need is especially relevant in countries where decentralization is taking place, which transfers the responsibility of forest resource management and gives capabilities to communities, local government and the private sector.

### **Principal challenges and issues to be considered**

33. One of the main challenges facing the Region is the definition and implementation of strategies for generating data and information on forest resources, in order to, along with several other priorities, respond to the need of planning and developing activities to mitigate and adapt the effects of climate change and their REDD+ strategies, taking into account internal demands for the management and conservation of forest resources and the international requirements associated with agreements, mechanisms and global initiatives. Most countries of the Region are in the process of improving the quality of their data and information, with the collaboration of the international cooperation.

34. Improvement of forestry information in the Region faces a series of important challenges, which are detailed below. The Commission is invited to take into consideration these and to recommend political measures which would improve the compilation, management and use of forestry data and information in the Region, as a key element to advancing towards sustainable forest management and thus strengthening the livelihoods of communities that in one way or another are associated with the forests.

- **Development of methodologies and technology:** most of the countries of the Region are in the process of developing and harmonizing the methodologies and technologies of remote sensing and field

sampling which will allow them to adapt to the requirements of measuring, reporting and validation, as demanded by processes associated with the United Nations Framework Agreement on Climate Change (UNFACC), particularly REDD+. It is important to highlight that national inventories should not only compile data on carbon deposits (emission factors), but also on the multiple benefits of forests, as well as information to monitor issues related to management, public policies, legislation and national forest programmes, in order to achieve sustainable management and the conservation of the forests.

- **Technological limitations:** many countries of the Region do not have structural or technical capacities to carry out compilation and management of forestry information on a level that would allow them to respond to the current requirements. The transference of technology to less developed countries and the strengthening of their public institutions arise as the main challenges in this area.
- **Accessibility to remote sensing resources:** accessibility to remote sensing information for monitoring forest resources is fundamental, especially if the countries have to report on historic reference levels. This issue brings interesting possibilities for collaboration between countries in the Region, as some have made significant technological advances.
- **Management of data and information:** decision-making requires articulated systematization of information on the status of the forest resources, administration, commercialization and documentation. In addition, the information must be available on an international, national and sub-national level.
- **Institutionalization and financing:** achieving periodical forestry monitoring and forest resource information systems requires a well institutionalized process. It is a challenge for countries to achieve a level of institutionalism which would facilitate the assignation of funds from the State, and also facilitate the search for technical and financial support through international cooperation. Countries that opt for the REDD mechanism will be better placed to achieve the financing of conservation projects and sustainable forest management.
- **Harmonization of regional processes:** the systematization and harmonization of forestry information will be fundamental to the support of regional and sub-regional strategic programmes, such as the Regional strategic programme for the management of forest ecosystems (PERFOR) in Central America. Joint action between countries could be more effective and efficient in reducing loss and degradation of forest resources and in advancing towards their sustainable management.

#### Points for discussion by the Commission

35. In addition to the above, the members of the LACFC could consider adopting measures and providing advise to FAO in order to:

- Facilitate horizontal cooperation in the Region on the issues of training, access to satellite imagery information, institutionalism and financing. This will in turn facilitate the development of new strategies in the forestry sector and effectively promote negotiations on climate change, especially REDD+.
- Provide technical support to facilitate national capacities in:
  - forest cover monitoring techniques using remote sensing and national forest inventories;
  - access to remote sensing imagery and technology for its interpretation;
  - management, analysis and distribution/accessibility of information from forest monitoring, using modern technology for the systematization of data and information.
- Consolidate the institutionalization of national processes on forest resource information in order to facilitate financial cooperation through the economic integration processes present in the different sub-regions.