

# UN-REDD and GEO-FCT MRV Joint Workshop Guadalajara, Mexico *Minutes*



Authors: Inge Jonckheere, Rosa Roman-Cuesta

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UN-REDD PROGRAMME

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22-24th June 2010





## Executive Summary

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The UN-REDD Programme along with the Group on Earth Observations (GEO) and the Mexican Forestry Commission (Comisión Nacional Forestal – CONAFOR) held a workshop entitled “Measurement, reporting and verification, a roadmap for implementation at the country level” from 22 to 24 June 2010 in Guadalajara, Mexico.

Pilot and partner countries of the UN-REDD Programme shared experiences in implementing MRV systems for REDD+ while identifying current challenges, problems, bottlenecks and data issues. The main goal of the workshop was to identify best practices and relevant experiences that could be adapted and replicated by others.

Over 80 participants from 30 different countries at the workshop discussed methodological approaches to monitor land use changes focusing especially on forest land use changes; activity data monitoring, estimating emission factors (carbon stock changes) by implementing solid national forest inventories for eventually developing Green House Gas (GHG) inventories for forests and measuring Reference Emission Levels (REL) and Reference Levels (RL).

Participants shared experiences concerning the implementation of MRV systems that will serve as a basis for the REDD+ mechanism within the UNFCCC. These systems will also improve natural resources and land management. The GEO group, which brings together earth observation agencies from around the world, offered its support to work jointly with the UN-REDD Programme to make satellite imagery available to countries, which will allow for better integration of MRV systems. The World Bank expert on MRV at the meeting stressed the interest to work jointly with the UN-REDD Programme to maximize the resources offered to countries and to streamline the capacity building.

Participants in the meeting agreed to strengthen capacity building towards improved design and operation of MRV systems along the lines of the current cooperation between the Brazilian National Institute for Space Research (INPE) and the Food and Agriculture Organization of the United Nations (FAO).

So, in conclusion, there is good progress and a logical way to proceed with the collaboration between UN-REDD, GEO, and participating countries. Collaboration is now rather informal, so a follow-up of the meeting could possibly be a more formal way of collaborating in order to enhance a better dialogue in sharing full MRV experiences.

The following is a summary of presentations, questions and responses given during the 3-day workshop:

## Tuesday 22 June 2010

### Key Note Speakers

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**Juan Manuel Torres Rojo**  
*Director General of CONAFOR*  
*Mexico*

The director introduced the meeting and welcomed the participants. He declared the importance of MRV in connection to REDD + also emphasizing that development of methods to accomplish a good MRV system is important; especially in the next two years. This meeting is therefore an important step in the roadmap.

**Andreas Tveteraas**  
*Senior advisor of*  
*The government of Norway's International Climate and Forest Initiative*

The climate change factor from forestry is very important and large (1/6 of total emissions today). Changes in forest use can move the greenhouse gas emission balance very quickly. These two reasons together make it important to work very hard to reduce emissions from the forest sector. A well functioning MRV component is in this respect the key factor for a successful REDD program, and therefore this meeting is of utmost importance. Norway is strongly supporting, also financially, the MRV work. It is good that this meeting has two important key players as organizers, the UN-REDD Programme and GEO, as two very important organizations in the puzzle of the coming MRV. Mr. Tveteraas also thanked Conafor for hosting this meeting.

**Alberto Sandoval**  
*Senior Officer of FAO*  
*UN-REDD, NRCD Division.*

Mr. Sandoval welcomed all the participants to the meeting, declaring the objectives for the meeting with the main statements and scope of the meeting:

- Present the current framework for MRV under the UNFCCC;
- Present the support offered by UN-REDD to MRV for REDD+;
- Present the support offered by GEO-FCT;
- Present the experiences implementing MRV for REDD+ at country level and
- Identify best practices and relevant experiences for the implementation of MRV for REDD+

**Fernando Tudela**  
**Deputy Minister**  
**Planning and Environment Policy**  
**SEMARNAT**

### **The road to COP 16**

Dr. Tudela spoke on the difficulties that MRV and REDD+ present when it comes to communicating these terms and also the objective of these processes to the general public, and maybe the nomenclature is thus a problem when communicating. This is something to keep in mind when discussing these issues outside these technical meetings.

In Dr. Tudela's opinion, MRV probably has to go beyond REDD+, as many other values and needs will have to be addressed. All countries have monitoring, but on different levels, and the reporting on the two year level, will be a challenge for many reasons of which one is the costs involved. The key word in the near future is "transition". Mr. Tudela means that Mexico intends to have consultations beyond the REDD+ as Mexico feels that other issues will also have to be addressed. Dr. Tudela is optimistic for the future development even if he recognizes the problems are lying ahead. Transparency in both the REDD+ and the MRV work is important but also the national decisions will have to be without compromising, which is a key for success. When it comes to the technical terms of REDD+ there are different levels of challenges. As deforestation is fairly easy to measure or make estimates of, degradation is much more difficult to grasp for many reasons. The + factor in REDD + is even more challenging to estimate, which is something to think about during this meeting. Integrity, transparency and national decision making are also key words to keep in mind further on as well as in this meeting.

One very important aspect to approach is that REDD+ will need financial support and it is also important within the MRV to include the MRV of the financial support. Who is investing what and for which purposes? The money issue will be very important in solving the lack of trust towards the REDD+ process since the Copenhagen meeting in 2009. This meeting will help move thinking forward in a non-negotiating manner. The minister thanked the organisers and the participants.

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## **Session 1: UNFCCC COP Methodological guidance on MRV**

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**Maria Sanz-Sanchés**  
**UNFCCC Secretariat (Bonn, Germany, Europe)**

### **REDD + progress made - monitoring and reporting aspects**

Ms. Sanz-Sanches described, in a thematic way, what has happened historically up to now within the field of climate change and forestry. Ms. Sanz-Sanches has also described the framework of MRV and the COP (the Conference of the Parties) and she emphasized the words transparency and consistency, as well as describing COP15's "Decisions on Methodological Guidance while guiding us through the "Main elements". Ms. Sanz-Sanches has further described the coming steps of the secretariat, of which training of experts and information sharing are important parts.

**Questions:**

1. Comments on safeguards: R/ is necessary to start the negotiations in Barcelona after Copenhagen, it is necessary to have a consensus, but there is no decision yet.
2. Budget to implement in countries for capacity: R/ In June was established by “hand”, there is a working group ongoing, but no final budget has been decided.

**Presentation available at:**

[http://www.unredd.net/index.php?option=com\\_docman&task=cat\\_view&qid=802&Itemid=53](http://www.unredd.net/index.php?option=com_docman&task=cat_view&qid=802&Itemid=53)

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**Session 2: IPCC green house gases inventories of forest**

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**Thelma Krug**

***Vice-Chair of the IPCC Task Force Bureau, INPE***

***Brasil***

Ongoing UNFCCC negotiations, alternatives for REDD+

- a. As part of National Appropriate Mitigation Actions (NAMAs) MRV, financing capacity building, technology transfer
- b. As independent mitigation action: reduce emissions
- c. MRV is not associated in the REDD+ facilitating text by the chair of AWG-LCA. It is not yet discussed what this element means.
- d. Request SBSTA (MRV in brackets), because there is no decision if REDD should be part of only mitigation.
- e. IPCC, encouraged use of the most recent guidelines of IPCC (1996): Good Practice Guidance (GPG). It is encouraged to use the IPCC guidelines for non- annex 1 countries.
  - i. Identifies the major sources related to land use.
- f. 2006. All countries (Annex 1 and non-annex 1) can use them as they are suitable regardless of resources or experience.
- g. GPG LULUCF: fire causes is difficult to identify: “Outside managed land is followed by a land-use change”.
- h. The default method assumes that there is no net change in HWP (Harvested Wood Products).
- i. Land representation: approach 1. Total changes, approach 2, changes among land-use categories. Approach 3, same as 2- but introduce spatial explicitly.
- j. Yokohama (2010): recent meeting on design of forest monitoring systems, combination of ground based inventories with RS and modeling approach, use the RS data in forest GHG inventories, guidance on selectively logged forest, data on emission factors should be improved (models on biomass, etc).
- k. UNFCCC: national circumstances (e.g. If it is possible to assess the entire territory).
- l. Potential issues REDD+: factor on out natural and indirect effects of C stocks a non-CO<sub>2</sub> GHG emissions. Forest degradation needs to be better understood. How to

differentiate change from policies/measurements/actions, from natural variability.  
Definitions: consistent reporting (e.g. FAO), standardized (forest definition for CDM)

**Questions:**

1. Problems on definitions are a big issue, it could take into account current activities: R/ of course definitions are difficult to discuss.
2. Accounting MRV different aspects: R/ technical guidelines and accounting guidelines (more related to policy): even REDD+ offers many options (national or sub-national), you cannot have double accounting. There is a different perception of activities funding, how to establish strategies is a long way.
3. Main points tier 3 modeling: R/ Reporting is going to be revised, how confident that the model is or how it was calibrated. Is triggered, but we hope someday we will succeed. What are the minimal requirements to use the model, but depends on national circumstances.
4. Mentioned degradation of forests, the quantification is still not decided. How much has been advanced? IPCC has been invited by the UNFCCC. It should be a process to define for example what forest degradation is.

**Presentation available at:**

[http://www.unredd.net/index.php?option=com\\_docman&task=cat\\_view&gid=802&Itemid=53](http://www.unredd.net/index.php?option=com_docman&task=cat_view&gid=802&Itemid=53)

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**UN-REDD MRV framework**

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**Alberto Sandoval, Inge Jonckheere and Rosa Roman-Cuesta**

**UN-REDD Programme**

**FAO**

FAO UN-REDD presented its framework proposal approach. The aims of the proposal are:

- to broadly define the constituent elements of a national forest MRV system that complies with the IPCC guidelines on the development of forest GHGs estimates, and complies with the reporting requirements of the UNFCCC.
- to offer insights and country examples on how the forest MRV systems will support the national implementation of the REDD+ mechanism.
- to present methodological options to the requirements contained in the Decision 4/CP15, and to the indications arising from the REDD+ negotiations under SBSTA and AWG-LCA.

The proposed approach is mainly based on 3 main IPCC elements: activity data, emission factors and GHG inventories. Each of the three elements were linked to the MRV elements and presented in detail.

**Questions:**

1. Particularly in respect to the last slide: REL/RL is difficult to understand: IPCC has the 5 activities in REDD+, some of them may require the estimation of the present carbon stocks: RL reference on C stocks. REL: 2 activities under REDD reducing emission on DD is reducing emissions on carbon Stocks. It is not needed to investigate all forest area, just the changed areas.
2. Presentation indicated support of Tier 2-Tier 3 for REDD+, even if negotiations will be different tiers for the specific carbon pools. IPCC provides key categories for countries that could reach Tier 2-Tier 3, others as defined in IPCC as assumptions (defaults). Tier 1 might be useful at this stage, and countries need to evolve in time.
3. It was mentioned “the implementations are going to be by predictable source of funding”. However they are going to change something they have to find alternatives, but in long term period. Accuracy should be part of the negotiations, in the agreement of comfortable and capabilities to put money on this. What type of mechanism for negotiations is going to be developed, will become clear in the future.
4. Alex Lotsch (World Bank). Thelma alluded to T1-T3.
  - a. To what extent does your framework allow the evolution to progress from Tier 1 to Tier 3. How can your framework facilitate the evolving actions from countries? R/ Most of the countries are going to start with MRV implementation to reach Tier 2 and experiences should be shared.
  - b. Degradation is not clear within GPG, and these guidelines do not give any clear definition on degradation. How are you going to support or address country needs on this issue? R/ Use INPE support to discuss, based on their experience. FAO is developing a document to contribute to have clearer definitions. Spanish Natural Resources Research Center. About land cover classification system: a way to bring even classification system in a common understanding.
5. The possibility to estimate the deforestation and degradations with the available RS DATA was discussed.
6. Brazilian methodology if it is useful for Congo Basin using optical data.
7. Equation activity data and emission factors. What will happen if the improvements between these two issues are not at the same level; it is not necessarily beneficial to have very accurate data from one issue and less in the other. This is something to discuss with the countries.

***Presentation available at:***

[http://www.unredd.net/index.php?option=com\\_docman&task=cat\\_view&qid=802&Itemid=53](http://www.unredd.net/index.php?option=com_docman&task=cat_view&qid=802&Itemid=53)



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## **GEO Forest Carbon Tracking (FCT) and GEO-FCT Framework**

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**Giovanni Rum**  
**Geo Secretariat**  
**Switzerland**

Portal available at [www.geo-fct.org](http://www.geo-fct.org), Navigation overview

**Alex Held**  
**CSIRO**  
**Australia**

Processing of satellite data in GEO-FCT

**Per-Erik Skrovseth**  
**Norwegian Space Center**  
**Norway**

Satellite Products Acquisition

### **Questions:**

1. Forest fire is included in the forest carbon tracking activity: not directly but as a topic that relates to degradation or affects annual forest/non-forest map and density of forest.
2. INPE/ Thelma, is GEO really a facilitator of data access? It is not an easy task, GEO could promote and facilitate between agencies. The use of low resolution optical remote sensing was also mentioned, because the very diverse patterns of forest and maybe this is not enough. R/ GEO can play a huge role – up to a certain extent but then that data availability will not be possible any more. Countries will have to buy imagery in the future and, perhaps, very high resolution satellite data. This is a problem. Will 25 m resolution be enough for every country to map forest change / degradation?
3. Countries should be autonomous in the long term, there should be country ownership. They countries confirmed this is one of the pre-conditions.
4. Full cover satellite images would be necessary.
5. Countries raised worries about ground-truth information. R/ There are some demonstrations at operational level: they have access to available data in Tasmania (as e.g.): +17 times time-series complete coverage + Radar + LIDAR + research sites + inventory (since 1940) (1900 permanent plots).
6. Of course in Tasmania you will have many data, what about other countries e.g. Congo basin.
7. (Alex Lotsch, WorldBank) To what extent does GEO FCT have the mandate, capability, funding to carry out capacity building? R/ Willingness/desire to work with other international institutions and mandate for capacity building. Capacity building: funding will be something to include as GEO has no specific budget for such. Mapping is a product for capacity building. Radar data processing is so much more complicated. Requires much more capacity building. Harder to make operational. FCT includes capacity building component through support in access to data and processing

8. Models and RS need national calibration. In the realm of models at the tier 3, not much guidance. Can be further developed at Sydney meeting.
9. Pan-tropical wall to wall is technically spoken a great option, but it would be useful to show what critical problems can be solved rather than expanding geographic coverage. Narrowing area of coverage goes against the interoperability mandate as we won't be able to test the compatibility in enough circumstances.
10. Notion of Verification Site is designed to include ancillary data for a number of validation purposes. Verification Sites were proposed by the countries. Verification Sites are 3-5 key sites in each country designed to test accuracy of mapping forest types in each country.

**Gary Richards**

***Australian Government Department of Climate Change  
Australia***

GEO FCT and development of a global forest monitoring network

**General questions:**

1. Q: GEO claim they will support country MRV systems but where is proof that this is possible? Carbon varies from 0 to > 100. We need though accuracy and precision figures. Do you have the research that shows the FCT can produce the figures with the accuracy and precision necessary to satisfy the necessary requirements? R/ GEO: There is great prospect and the demonstrations to date have shown this but it is a very early stage of development so we are moving forward. We cannot let it happen organically. We need to go forward. R: Tried in satellite data community with biomass etc but it has never been done without lots of ground data.

## Wednesday 23 June 2010

### UN-REDD SESSIONS

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#### PANEL ON ACTIVITY DATA

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The scope of the panel was introduced by Erik Lindquist, FAO, namely to discuss national programs and progress for each of the countries.

- What is "Activity data"? A description of human land use (related to forests), presented as mapped classes (Approach 3) and presented as a matrix of changes through time.
- Activity data x emission factors = the magic numbers, so called "emission estimate (CO2 equivalent)"

***Presentations available at:***

[http://www.unredd.net/index.php?option=com\\_docman&task=cat\\_view&gid=801&Itemid=53](http://www.unredd.net/index.php?option=com_docman&task=cat_view&gid=801&Itemid=53)

## **Mexico**

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**Carmen Meneses**

**CONAFOR**

**Mexico**

### **Questions:**

1. FAO: Has Mexico tried to apply other vegetation indices instead of NDVI?

Carmen: No, only NDVI has been used.

2. Ecuador: how do you handle cloud cover, especially if you want to track degradation?

Mexico/Carmen: Mexico has used the technique of making a composite image.

## **Indonesia**

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**Mr. Ruandha Agung Sugardiman**

**Ministry of Forestry**

**Indonesia**

### **Questions:**

WB: The technical capacity you have developed – How have you done?

A: Annual training of regional offices. In HQ the capacity is less.

## **DRC Congo**

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**Landing Mane**

**OSFAC (Observatoire Satellital des Forêts d'Afrique Centrale)**

**Democratic Republic of Congo**

### **Questions:**

Carmen: How to go from land cover change to carbon?

A: how to quantify carbon stocks and emissions are not yet done.

FAO: What's needed to move from this step to something more operational and to be able to report annually?

FAO: much of the deforestation happens in small areas that the monitoring system does not pick up.

Indonesia: Monitoring is operational, but still some constraints such as cloud cover and capacity of staffing. Access to data is no longer a problem, and access to annual Landsat data. Aim to also make more detailed mapping and to analyse the drivers of deforestation.

DRC: Much research on deforestation and how to move to carbon stocks is still not clear. Problem with data access in the region, data is very expensive.

WB: NDVI is sensitive to inter-annual variability. How do you try to account for this or assess whether changes are real. When annual reporting is required, have you done any work on accuracy estimates?

Carmen: Doing a work on accuracy estimates, and the NFI re-measurement is an important source for this work. Mix of inventory data and images.

FAO: How have the institutional arrangements been put in place? In the Congo Basin, there is an institution mandated to give support on MRV – are there arrangements where countries can access this regional support?

DRC: DIAF is in charge of NFI, and Department of Environment for greenhouse gas inventories, and the two universities (Kinshasa and Kisangani) for the field work. COMIFAC a regional org. for the Congo Basin, OSFAC (regional NGO) could be a technical service to COMIFAC to support MRV. However, OSFAC has not done MRV focus activities yet, but plan is underway

Indonesia: There is no MRV institution in the country, but with support from Norway the idea is to set up a national MRV institution.

FAO: Activity data – where active use of remote sensing is encouraged. Technical problems, spatial resolution, data access, etc. We note that capacity has dramatically improved the last 5-10 years.

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## **PANEL ON EMISSION FACTORS**

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The panel was introduced by Dr. Inge Jonckheere, FAO, and UN-REDD. She pointed out key issues that need to be looked at and in specific the ones related to NFI approaches to the countries and how they fit into MRV.

### ***Presentations available at:***

[http://www.unredd.net/index.php?option=com\\_docman&task=cat\\_view&qid=797&Itemid=53](http://www.unredd.net/index.php?option=com_docman&task=cat_view&qid=797&Itemid=53)

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## **Ecuador**

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**Guillermo Sanchez**

***Ministry of environment  
Ecuador***

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## **Tanzania**

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**Gerald Kamwenda**

***Ministry of Natural Resources and Tourism  
United Republic of Tanzania***

**Questions:**

1. NAFORMA was not previously planned in the preparations for REDD in Tanzania. How does the design of the NAFORMA inventory provide information that will be needed for REDD? Are allometric models being developed or will be developed by NAFORMA.
2. What will the challenges be for using land cover/use maps development? R/ This will be in fact an opportunity, since data will be made available and improve information on these maps.

**General questions:**

1. Philippines shared their experience for inventory/forest assessment. They had a big challenge to determine allometric equations for all species, they have more than 6000 species, with variability of wood density. Challenges in establishing MRV system exist. Scarcity of data on carbon stocks. Drivers are mostly outside the forest sector.
2. Mexico shared their experience: need to involve other institutions which are responsible for drivers of deforestation, e.g. agriculture, energy, etc. Measuring other carbon pools is being taken care, and data will be made available. Challenges for allometric modelling in different ecosystems, in temperate and mangroves ecosystems. In Mexico there are over 3000 species and if were to develop allometric equations for all of them then it will be a challenging task. One way is to use Universities/research institutions for this work.
3. What quality assurance is being put in place to control data protocol considering there are a lot of players like in Tanzania and Ecuador? Response by Tanzania: Tanzania had a first coordination meeting and the idea is to have MRV managed under one institution. Allometric equations can be collected if an ecosystem approach is followed like in Miombo or Mangroves, whereby in miombo you could look at three main big families and also in mangroves there are 6 of them.
4. Indonesia: Issue of standardization is it being taken care of or is it treated separately? This can be controlled by quality assurance no matter what type of plot shape or design is used.
5. A major issue: Do we have to do estimate emissions only in areas where REDD will occur (which is activity based) or it has to be total land use? Answer, this issue is still being discussed by the Convention (UNFCCC).

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**PANEL ON GHG INVENTORY**

Dr. Rosa Roman-Cuesta introduced the session, and emphasized the fact that most countries present in the meeting are not yet in the phase of GHG inventory reporting. However, through good examples, they might learn how to eventually get there.

**Presentation available at:**

[http://www.unredd.net/index.php?option=com\\_docman&task=cat\\_view&qid=798&Itemid=53](http://www.unredd.net/index.php?option=com_docman&task=cat_view&qid=798&Itemid=53)

### **General discussion:**

Tier 2 reporting is not a requirement –not even for key sources-, countries can start with simple reporting tiers and move forward in the future (Tier 2 and 3 are good practices but not requirements). Reporting should adjust to what donors/buyers consider comfortable for investing, and that can even be Tier 1 level especially for countries that have certain guarantees of internal organization and institutional capacity and a REDD+ reputation (e.g. Costa Rica and conservation activities).

Reflexions: Tier 2 requirements include country specific estimates and uncertainties. These two conditions are a guarantee that donors/market are paying for performance-based actions whose thresholds of error are known. Without uncertainty information, countries undertaking REDD+ will not be able to demonstrate credible reductions in deforestation and/or forest degradation in comparison to historic scenarios. Few donors/potential carbon credit buyers would be interesting in purchasing carbon credits blindly.

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## **Mexico**

**Ben de Jong**

*El colegio de la Frontera Sur  
Mexico*

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## **PANEL ON SAFEGUARDS**

**Presentation available at:**

[http://www.unredd.net/index.php?option=com\\_docman&task=cat\\_view&qid=800&Itemid=53](http://www.unredd.net/index.php?option=com_docman&task=cat_view&qid=800&Itemid=53)

**Maurizio Teobaldelli**

**UNEP**

**UK**

The presentation concentrated on ecosystem benefits.

### **Questions:**

FAO – FAO has done monitoring on forest uses, users and multiple benefits (including socio-economic aspects through interviews) in NFI programmes.

FAO – national processes not always linked to the information collected (lack of communication among different ministries). We need to help countries to use their information.

Chatham House presentation was provided by Alberto Sandoval.

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## **GEO SESSIONS**

Dr. Giovanni Rum has introduced the GEO session. Cameroon is missing. Giovanni is also going through the criteria's and responsibilities for including countries in their "Establishment of the National Demonstrators".

**Presentations available at:**

[http://www.unredd.net/index.php?option=com\\_docman&task=cat\\_view&qid=796&Itemid=53](http://www.unredd.net/index.php?option=com_docman&task=cat_view&qid=796&Itemid=53)

**Douglas Muchoney**

**USGS (US Geological Survey)**

**USA**

**Building a GEO-FCT Database**

Dr. Muchoney explained how the GEO FCT database is being planned to include national ground sample plots. These plots can be supplemented by new sample plots from ground measurements over time. Obviously the target is to make estimations of carbon stock.

Planning to establish also “best practices” on field sampling since many National Forest Surveys are not efficient.

Action 6a – Provide best practice methods in carrying out MRV.

6b – total cover data available

**Thelma Krug**

**Vice-Chair of the IPCC Task Force Bureau, INPE**

**Brasil**

**National demonstration Brazil**

- 478 million ha of forest .... an impressive and challenging figure!
- Annual wall-to-wall assessment of gross deforestation and since 2007 annual wall to wall of “degradation”, as it is seen in the satellite images.
- Bi-annual estimates of secondary vegetation and bi-annual mapping of land-use for Amazonia.
- Permanent parcels network is being established right now.
- A more scattered forest inventory – different systems in different parts of Brazil - not total cover. Sampling on ground important for “Carbon Emissions Estimations” - ground sampling and also destructive ground sampling to get better estimates. Combined with satellite analyses.
- Coverage 350 000 ha “Gross” deforestation digitals since 2001 (Amazonian). Since 2008 degradation (selective logging etc.)
- All remotely sensed data available free on internet.
- Using the development of deforestation for policy uses.
- All products including software – so far – available on internet and free for use.

## **Colombia**

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Deforestation of 0.1 %. This country has decided some years ago that it is important to follow this.

Integrating remote sensing and field data and see the field plots as important.

Open data-access policy.

## **Guyana**

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> 80 % of country covered by forests.

This country is carrying out mapping and classification also based on and with support from ground sampling.

## **Indonesia**

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Indonesian National Carbon System was described in technical terms.

## **Mexico**

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MRV coordination group. (government + academia + OSCs)

Bilateral negotiations with Norway for fast implementation.

National forest inventory 1992-1994 16000 plots.

22000 permanent plots 2004-2007

2008-2009 Re-measurements

National, state and municipal statistics on deforestation - also based on administrative data.

Very interesting statistics about reforestation due to emigration and economic development.

Very impressive presentation on how to combine NFI plot info together with satellite data in a statistically correct manner.

Asking for support from GEO on processing, radar and free remote sensing data.

## **Tanzania**

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Limited access to satellite data – important.

NAFORMA ground data available from 2012.

No spatial data infra-structure.



## Congo Basin

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200 million ha

Talks about data acquisition - Limited access to internet, few satellite receivers.

**Thursday 24 June 2010**

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### UN-REDD Plenary Session

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**Presentations available at:**

[http://www.unredd.net/index.php?option=com\\_docman&task=cat\\_view&qid=794&Itemid=53](http://www.unredd.net/index.php?option=com_docman&task=cat_view&qid=794&Itemid=53)

**Presented by the pilot countries**

1. Provide methodologies as simple as possible, mainly for capacity building, in countries with low capacity building start with more simple methodologies and increase the difficulties sophisticated tools when capacity is improved in a first stage.
2. Have some messages from each group from GEO and UN-REDD.
3. How to find models for harmonization of models and the availability of RS information.
4. INPE informed on the availability of "CBERS" satellite remote sensing acquisitions. Position of the meeting with which other agencies can provide some game from data to the countries.
5. Mexico: Satellite imagery analysis and ground survey is a mandate for MRV. Access to satellite data imperative for continuing efforts. Ensuring a constant data stream through installation of receiving station should be considered (or negotiations in place with providers).
6. INPE, discussions exist to receive information through antennas. Antenna in Brazil Mexico-North. For Africa Canary Islands-Egypt. Information for the Congo Basin and the other possible one in Kenya is being negotiated

**Questions:**

- Managed concept vs country approach of REDD
- Need to distinguish the two things—MRV approach (technical issues) and MRV system (entire management of emission from development perspective in country), the two are completely different.
- MRV is currently under negotiation so many decisions cannot be made yet. Only a few elements/issues that need to be put in place for full MRV system for REDD+ are fully defined now.

- Countries are doing very well and are improving their MRV systems, but what is the limit to...
- What can we do now with regard to REL? Should we use the guidance in IPCC and develop country specific RELs
- Conclusion of joint cooperation between GEO and UNREDD. R Alberto/ System to share satellite imagery
- Transparency

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## **GEO wrap-up**

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**Giovanni Rum**  
**GEO Secretariat**  
**Switzerland**

- Need for coordination of data collection, building of consistent database to build systematic archive of RS and ground-based measurements
  - o Data standards can not be imposed but consistency assured
- Diversity among the NDs reflects national circumstances in terms of progress, approach and institutional arrangements
  - o Some are doing first steps
  - o Some in refinement phase
  - o Some advanced
  - o All have data challenges
  - o Capacity building a need across all countries
  - o More clarity on verification sites and methods for accuracy assessment
- Data issues
  - o Currently there are challenges in data supply
  - o More systematic approach necessary
  - o Interoperability necessary but difficult to achieve
  - o Improve access and use; better data transfer capabilities
  - o Documentation of methods important/priority
- Use of commercial observations
  - o Commercial satellites provide more data
  - o Creative licensing required
  - o Current work has mined available data and progressed analytic products
- SAR processing
  - o Stared to move toward systematic large-scale applications; lots of examples in FCT
  - o Automated processing necessary and software should move towards this end
  - o SAR suitable for deforestation and selective logging (at 1m resolution)
  - o Mix of SAR and optical deemed optimal; FCT testing in NDs
  - o Special effort on capacity building for SAR processing
- Linking forest maps and carbon data

- Fusion of ground and satellite data will reduce uncertainties from both measurements independently
- Scale-independent statistical models used to develop carbon density at pixel-level

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## UN-REDD MRV Challenges

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In this session, the final comments/ suggestions were discussed in plenary.

1. What are the final goals of MRV? A: FAO-MRV wants to help with the country national GHG inventory that covers the forest sector, independent of the not yet decided role of REDD+. MRV systems should monitor beyond forest as well.
2. Capacity building needs (country will need to run the show, costs, technical requirements, sustainability of services, need to talk much about policies and drivers- we want to reduce emission not only to monitor them)
3. How shall we deal with the challenges? We should start with what is available and build this step by step. How to implement it? GEO FCT and UN REDD will discuss and figure out how to do implement it and get to the final conclusions/ challenges. Both RS and in-situ part should be considered.
4. UNEP-WCMC on MRV system: implication of national implementation strategy, while MRV modality deals with the technical aspect. So how to develop an MRV system that is well-structured and can be implemented in national strategy for emission reduction.
5. IPCC:
  - still some problems since negotiations ongoing. REL discussion is still open. There is no consensus on the socio-economic part, so it is very difficult to anticipate. Every country should start thinking how to conduct REL.
  - MRV technical focus should be the focus since i.e. "MRV for governance" is not yet used in UNFCCC
  - so the focus should be to advance on technical issues that we can already address out of negotiations and uncertainties Mexico: We are eager to understand and learn more about MRV. A definition maybe has to be changed and taken up in the future in order to have an opportunity for IPCC and the MRV process. We do not know how much we are prepared for the Tiers etc. Is the way we are preceding enough or do we need more? What is the limit? R/ FAO: It depends on the ambitions of the country. Tools and technologies are there. Maybe that the best way to see the rationale of Tier 1, 2, 3. What is the best way to manage the resources in the country in terms of benefit for the society.

6. Donors: This meeting has established a useful base, also to see where the countries' challenges lay. GEO and UN-REDD are working towards the same goals and in some same countries. Can we expect a joint approach? R/ GEO: The both programmes emerge. There are no duplicates. GEO will accompany technological development providing satellite data to support the countries. The two activities are quite complimentary and the dialogue has to continue. R/ UN-REDD: UN-REDD sees the possibility for a joint collaboration to have images on a frequent, homogeneous manner. This meeting has been a step forward in this sense. Also the INPE support is important in order to have important RS actors working jointly. The synergy will be further developed, f. e. the outcomes of this meeting will go the plenary of GEO in Beijing later this year.
7. World Bank: Focusing on RS: it is tempting to jump into promising technology that sometimes does not have continuity. In order to achieve good results in the countries, an efficient way to move forward should be put in place.
8. FAO: What do countries think/ need/ what are their data needs?
9. Democratic Republic of Congo: REDD issue is new for us, both a lot of information can be used for REDD, but we cannot do this if the data is not validated before. We need capacity building to use tools for the monitoring system so as to move ahead.
10. Tanzania: It is a process to get to REDD+, the process should be well-known to add some speed.
11. Indonesia: REL is not clear. The good practices, namely experiences shared between countries helps. Moreover, forest degradation should be discussed in the negotiations.
12. FAO: The countries present in the meeting are called "pilot countries", it is an opportunity to be in the middle of the negotiations. We can therefore focus on technical development with these countries to be the first to actually do something.
13. Google: What does transparency mean? What data access is needed for this? R/GEO: The certainty of modality issues can be compared with the Kyoto protocol situation: in 1997 there were expectations about possible outcomes and regulations, in 2001 there were other outcomes, so 4 years after the initial negotiations, the decisions were quite different. It takes a long time to clarify these issues. Only in 2004 the Kyoto lines were clearly defined. Next SBSTA or COP won't give these answers for REDD. Therefore we should have a close look at the training of the Kyoto Protocol. In the protocol, no one knows which Tier is needed and what transparency is. That's why we should push for clarification to negotiators and to promote debate and test systems. R/ FAO: Part of the governance work will bring these issues to communities. There is now some concern on the convention text, we might look into

transparency standards (set of parameters) from i.e. extraction industry, to be brought into the system.

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### FCPF world Bank

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**Alex Lotsch**  
**World Bank**  
**Washington, USA**

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### Google Earth

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**Rebecca Moore**  
**Manager Google Earth Outreach**  
**USA**

-Aim: building a platform to easily build/ share a MRV system.

-Beta testing made before COP 16: Landsat and MODIS

#### Questions:

1. Planning to work with European Space Agency (ESA)? R/ ESA is part of GEO-FCT and plans to host their data. For example the oil spill: the best data turned out the Envisat sensor. So in case you have a specific point: Google is open for collaboration.
2. Will radar data be used? R/ Google let the science do the work. In Phase 2 radar is foreseen, not in the first Phase. COP 16 Products will become operational after COP 16, as the products of COP 15 are operational now. A second phase will be making the algorithms available.
3. How will the data sharing be organized with the countries? R/ There are multiple kinds of data; some are in the public domain, so there is an open data policy. Google is going to serve governments and companies to deal with requirements on data.
4. Terminology and possible implications? R/ Google builds API: Google is not responsible for the content.

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### Closing remarks

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**GEO** concluded the meeting indicating that the agenda and concept of the meeting were very strong and that the meeting has been very productive. GEO and UN-REDD have shared the process and the depth of thought was impressive. GEO thanks Thelma Krug for the IPCC insights and indicated that IPCC contributions are very welcome to explain the guidelines. Overall the meeting was held in a good spirit for collaboration, with people working together which is critical to work towards goals. GEO also thanked CONAFOR for the hosting. In overall, there is good progress and a logic way to proceed with UN-REDD and GEO in accordance with the countries. Collaboration is now rather

informal, both should start working more formal in order to enhance a better dialogue in sharing full experience.

**UN-REDD** confirmed the positive outcome and productivity of the meeting and thanked all the participants of the countries for sharing their experiences. The challenge is quite big, there is no time for competition since competition is time. So many heads of state are heading to the same goal. GEO and UN-REDD should work towards REDD happening, and in this framework the results of this meeting can be useful for COP 16 and South Africa.

**CONAFOR**, Jose Carlos Fernandez: He thanked all the technical staff and people working in both Mexico and Geneva and Rome for the logistics of the meeting in order to make it smooth. He ended the meeting with some key questions:

- How to prevent REDD not becoming a very expensive and complex creature?
- How to digest methodological challenges since there are different ways to make it possible.
- Promoting of capacity building among countries is a priority;
- Need to formalize the collaborations between some institutions;
- Mexico is keen on an informal way of collaborating with UN-REDD and GEO. There are both informal and formal opportunities for going forward with REDD.

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## General conclusions

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1. REDD+ is a process under negotiation in the UNFCCC. Definitions, strategies and methodologies are in a developing stage. Therefore FAO tries to provide guidance on technical aspects for the set-up of a national MRV system in order to achieve the minimum requirements to support countries in their readiness for REDD+ accounting.

Currently there are two tracks for REDD+ under negotiation:

1) REDD+ will be a NAMA and emission estimates will be MRV'ed (Verification might be substituted by "reviewing" (MRV, financing, capacity building, technology transfer have to be consistent with those for other NAMAs) or

2) REDD+ will be an independent mitigation action and estimates might not require MRV approaches. MRV systems for REDD+ are therefore not straight forward yet.

[They might be required for other country needs other than REDD+]

Independently of which final track REDD+ undergoes, countries undertaking REDD+ will need to demonstrate credible reductions in deforestation and/or forest degradation in comparison to historic scenarios in order to obtain performance-based financial incentives.

The UNFCCC decision 4/CP15 requests countries to provide forest emission estimates that are transparent, consistent, as far as possible accurate. The most plausible way of obtaining transparent, consistent and accurate estimates of forest emissions and removals is through MRV systems.

UNFCCC decision 4/CP15 requests non-Annex I countries to establish, according to national circumstances and capabilities, robust and transparent national forest monitoring systems and, if appropriate, sub-national systems as part of the national monitoring systems that:

- (i) Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;
- (ii) Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national capabilities and capacities;
- (iii) Are transparent and their results are available and suitable for review as agreed by the Conference of the Parties.

1. FAO should insist on the importance of the use of combined methodologies of RS and ground data. Already, there are many good experiences on data management using RS and ground data, (e.g. Mexico case showed that the ground data have improved the value of RS and GIS analysis).
2. The availability of RS sources still is one of the most important concerns to develop an operational MRV system. There are several good opportunities with GEO and Google, where both initiatives offer support to the countries.
3. The participation of countries on the discussion was very diverse, which could be an indicator of the different levels of understanding of the MRV strategies and methodologies. Also the different levels of capacities from countries came out clearly.
4. Technology and methods should be developed not only taking into account the countries circumstances on REDD+ activities, but also the country capabilities to understand and receive these technologies and methods.
5. The goal of an MRV system is not necessarily emission estimates through GHG inventories ( $AD \times EF = \text{emission estimates}$ ). It is a UNFCCC COP decision 4/CP15 that countries interested in the REDD+ mechanism should provide forest emission estimates that are transparent, consistent, as far as possible accurate, using a forest monitoring system. To do so, countries will have to use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes. Therefore, for REDD+

implementation, countries must provide forest-related GHG estimates (emissions and removals) and the most operative way to do it is through an MRV system.

6. How to evaluate the transparency and limitations on the methodologies is a concern from the countries.
7. UN-REDD programme and GEO started a process to build cooperative actions for their support to countries to set up a national MRV system.