

# REDD+ Monitoring, and Measurement, Reporting and Verification workshop

## “Training the Trainers”

### End report

Third regional workshop  
Ethiopia, Addis Ababa  
19-23 September 2016



# **REDD+ Monitoring, and Measurement, Reporting and Verification workshop**

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*28 September 2016*

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### 3. General workshop information

#### Sponsors

World Bank Forest Carbon Partnership Facility (WB FCPF)

UN-REDD Programme of the Food and Agriculture Organization of the United Nations (FAO/UN-REDD)

REDD+ partnership

Global Forest Observations Initiative (GFOI) Office, with funding from the Australian and Norwegian Governments

GOFC-GOLD Land Cover Office

Wageningen University (WU)

START

Center for International Forestry Research (CIFOR)

#### Organizing Committee Leaders

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## List of Acronyms

FAO	Food and Agriculture Organization of the United Nations
GFOI	Global Forest Observations Initiative
GHG	Greenhouse Gas(es)
GOFC-GOLD	Global Observation for Forest Cover and Land Dynamics
IPCC	Intergovernmental Panel on Climate Change
MGD	Methods and Guidance Document from GFOI
MRV	Measuring, Reporting and Verification (of forest related greenhouse gas emissions)
NFI	National Forest Inventory
NFMA	National Forest Monitoring and Assessment
R&D	Research and Development
REDD+	REDD+ refers to the UNFCCC decision (COP16, 2010) on: “Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forest and enhancement of forest carbon stocks in developing countries.”
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
WB FCPF	World Bank Forest Carbon Partnership Facility
WU	Wageningen University

# 1. Background

## 1.1 The need for REDD+ MRV training support

The performance-based climate mitigation framework REDD+<sup>1</sup> encourages the reduction of emissions related to deforestation and forest degradation, and removals through enhanced forest carbon stocks and improved forest management. These activities should be measured and reported to the United Nations Framework Convention on Climate Change (UNFCCC); including a process of verification. This requires methodologies for estimating actual emissions and removals and for establishing the reference level. UNFCCC requests countries to build robust and transparent national forest monitoring systems to facilitate the measurement and reporting of forest related greenhouse gas (GHG) emissions, following the guidelines and guidance from the Intergovernmental Panel on Climate Change (IPCC).

Various training materials and tools have been developed to support forest monitoring and MRV for REDD+, (see section 3.2), and will be introduced in the workshop. All of these products aim to support and facilitate country processes with the development of capacities for implementing a national system for monitoring forest area and area changes, the associated carbon stocks and changes; and for MRV of REDD+ activities.

Additionally, the Global Forest Observations Initiative (GFOI) has been established as an international partnership on forest monitoring and, measurement, reporting and verification (MRV) issues for REDD+. GFOI brings together a community of international experts, donors and specialist organisations and provides a forum for them to consolidate their considerable resources in to a more holistic and specialised package of support for REDD+ countries.

## 1.2 The REDD+ training workshops

To make available training materials more accessible for countries and REDD+ / forest monitoring professionals, four (4) regional one week workshops are planned in three different continents: one in South-East Asia (in English), one in Latin America (in Spanish) and two in Africa (in French and English). The basic concept of these workshops is to “train the trainers”. A selected group of around 35 participants from countries in each region (2-3 per country) will attend with the aim of further disseminating the knowledge and insights gained to and train other relevant people who are involved in REDD+ monitoring and reporting in their country, in order to further build their capacities.

The workshops will be jointly organized by GFOI partners who include World Bank FCPF, FAO/UN-REDD, Wageningen University, and GOF-C-GOLD. Organization of the workshops will be under the coordinating leadership of Wageningen University.

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<sup>1</sup> REDD+ refers to the UNFCCC decision (COP16, 2010) on: “Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forest and enhancement of forest carbon stocks in developing countries.”

## 2. Workshop objectives

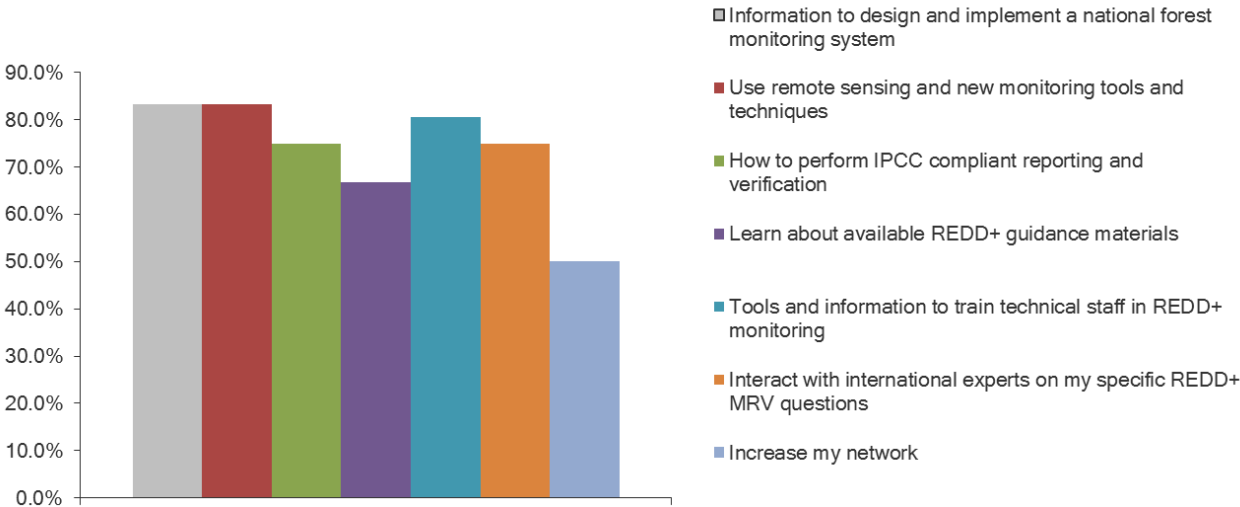
This workshop from 19-23 September in Ethiopia, will be the third in the series of four regional workshops. This workshop will be held in English. The aim of the workshop is to build upon existing expertise and experiences and to use available training materials and tools in a broad capacity development context to help build countries’ capacities and to spread the use and increase the impact of available knowledge and tools.

After the successful completion of the workshop, participants should be able to become ‘multipliers’ by further disseminating the knowledge and experience gained and train other relevant people who are involved in REDD+ monitoring and reporting in their country. In the workshops, participants learn about the different training materials and tools that are available and how these different materials all fit together in the “bigger picture” of REDD+ MRV capacity building. Participants will also know how and where to make request for further appropriate training and make use of available tools for implementation. Direct interactions with leading international experts present at the workshop will be facilitated so specific issues can be discussed face to face.

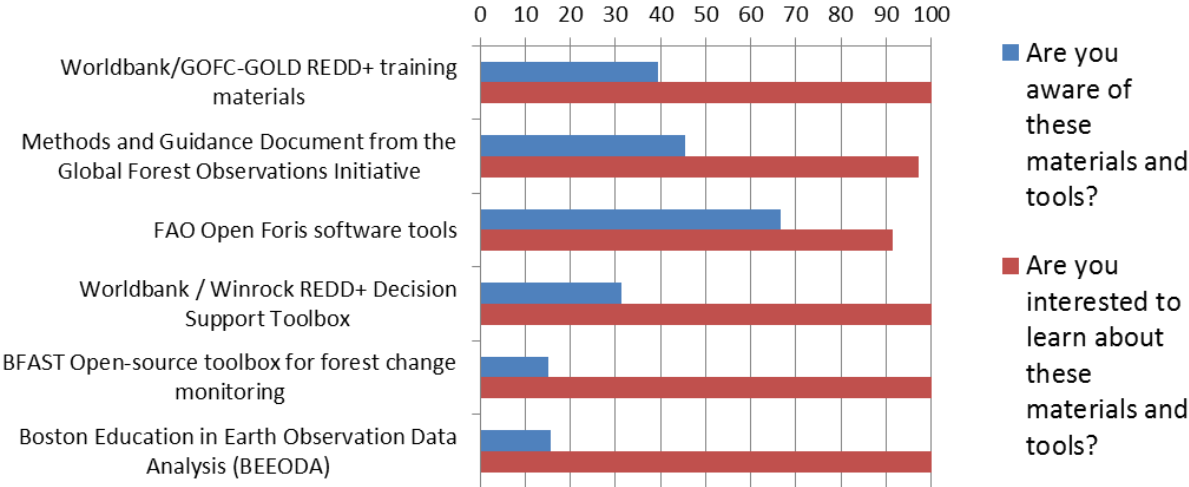
Through these regional workshops the materials will become more accessible for a wider public. Interactive settings, such as the workshops, allow course participants to ask specific questions and to better comprehend the topics and apply the knowledge to their own country context. Workshop participants bring back the knowledge to their own country and can spread the newly acquired knowledge and insights within their home institutions and networks.

Before the workshop an online survey was held among participants to gauge their interests and knowledge level:

### What are you most interested to get out of the workshop?



**Which of these materials are you aware of / interested to learn about?**





## 2. Training materials that were used/presented during the workshop

### **WB/GOFC-GOLD training materials:**

The WB/GOFC-GOLD training materials consist of lecture presentations, practical examples of implementation under different country circumstances, and exercises and tutorials. The training materials provide a strong basis for use in comprehensive educational and pedagogical approaches, thereby using the GOFC-GOLD Sourcebook, GFOI MGD and other guidance material as background documents. They consist of fourteen modules under three main components: REDD+ Background and Design, REDD+ Measuring and Monitoring and REDD+ Assessment and Reporting. They are freely available at: [http://www.gofcgold.wur.nl/redd/Training\\_materials.php](http://www.gofcgold.wur.nl/redd/Training_materials.php) and <https://www.forestcarbonpartnership.org/redd-training-material-forest-monitoring>

### **The GFOI Methods and Guidance Document (MGD)**

The MGD provides step-by-step advice on how to estimate emissions and removals associated with REDD+ activities, focusing on operational methods and freely available data. The MGD describes the use of remotely sensed and ground-based data in combination, and is systematically linked to IPCC guidance. This document published in English, Spanish and French are freely available at: <http://www.gfoi.org/methods-guidance>

### **REDDcompass**

The GFOI has also developed an overarching application called REDDcompass , which links available training products in an easy to follow workflow approach, accompanying countries all the way through the otherwise complex process of developing these systems and capacities. REDDcompass is a web-based application which enables users to progressively work through the key themes, concepts and actions of REDD+ National Forest Monitoring Systems (NFMS) for Measurement, Reporting and Verification (MRV) gaining access to a suite of GFOI methods and guidance, space data resources, training materials and tools along the way. Available at: <http://www.gfoi.org/reddcompass>

### **FAO Open Foris software tools**

Open Foris is an FAO-led initiative to develop, share and support specialized software tools required by countries and institutions to implement multi-purpose forest inventories. It is a set of free and open-source software tools that facilitates flexible and efficient data collection, analysis and reporting. Available at: <http://www.fao.org/forestry/fma/openforis/en/>

### **WB FCPF / Winrock REDD+ Decision Support Toolbox**

The REDD+ Decision Support Toolbox by Winrock International in partnership with the World Bank FCPF provides a methodological framework for countries to enhance their near term capacity for producing REDD+ FRLs/FREs. The framework outlines the decisions and steps needed to develop a FRL/FREL, the capacity, data, and technical steps needed to carry out each component. Available at: <https://redd-dst.ags.io/accounts/login/>

### **BFAST Open-source toolbox for forest change monitoring**

BFAST training materials and open-source toolkit enables countries to monitor changes in forests (e.g. deforestation and near real-time alerts) using satellite images (e.g. Landsat). Training materials and software are available here: <http://changemonitor-wur.github.io/>

**BEEODA/ MGD**

The Boston Education in Earth Observation Data Analysis (BEEODA) is a suite of open source software and education materials designed to provide practitioners with the software tools necessary for securing activity data. The software and materials have been designed to allow practitioners to make use of novel and often required methods such as time series analysis, object based image analysis and statistical inference, and have been developed to support implementation of the guidance outlined in the MGD. The education material is centered around modules which provide detailed instructions for completion of various image processing tasks. More information available here: <http://beeoda.org> and <http://github.com/beeoda>.

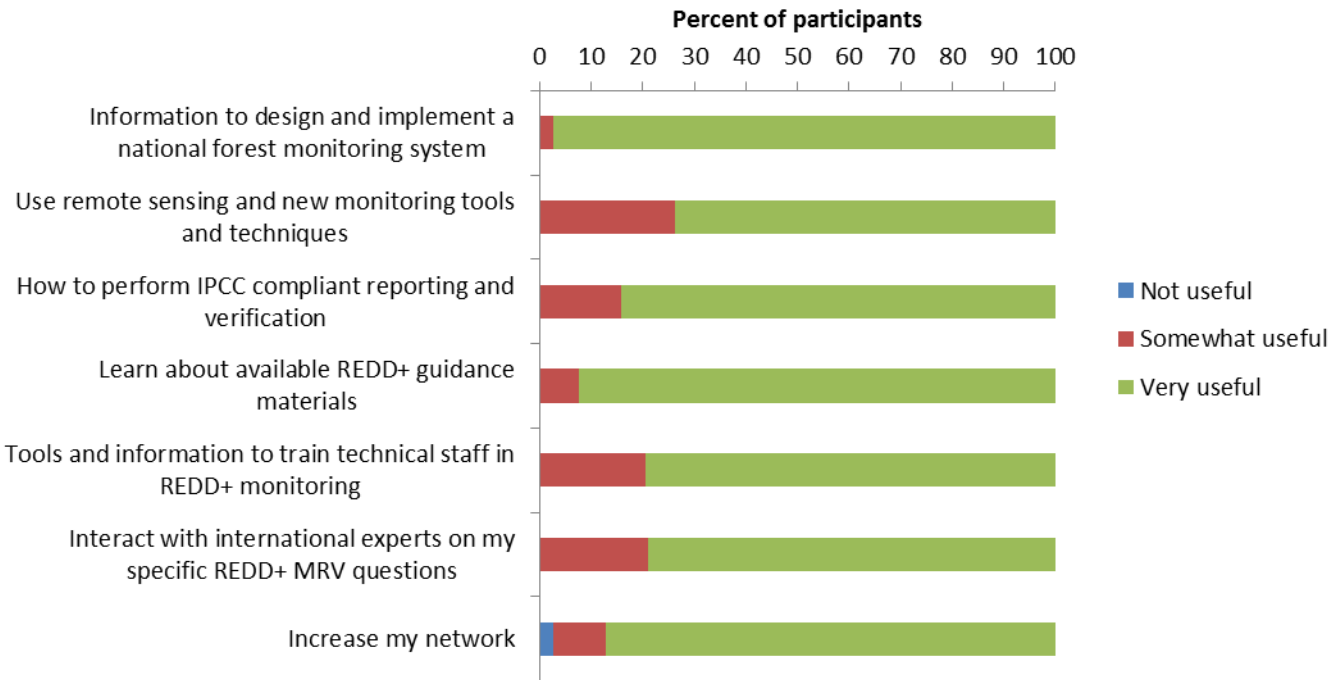
## 2. Workshop outcomes

The workshop outcome for a specific country and partners is a “way forward” plan based on the knowledge and understanding of various open-source training materials and tools available and presented during the workshop. Workshop participants will be aware of how to access and use materials and tools and how to develop a plan for further training for their country and regional circumstances and activities. The follow up idea of the workshop is to also build a user community of these materials and tools. Participants get to know the experts that are developing and making these tools available so they can also be contacted for questions and feedback afterwards. So specific workshop outcomes will be:

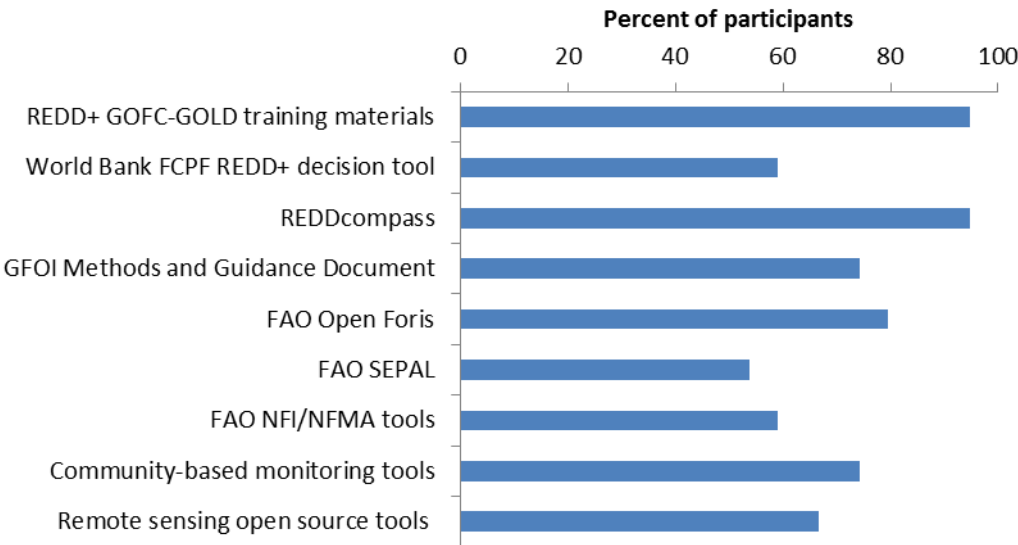
- The establishment of a network / community of practice for building capacities for REDD+ national forest monitoring systems and MRV in Africa using the tools available
- The establishment of partnerships with all workshop organizations and participants. Workshop participants will be aware of all the guidance and training materials, portals and tools that are available, and their relationships. They will make connections across the different organizations and contact points for seeking further information and training.
- Workshop participants are expected to perform practical training afterward the workshop and to deliver at least 1 module at one occasion in the next 6 months after the workshop.
- A survey will be sent around approximately 6 months after the completion of the workshop to assess the impact and usefulness of the workshop.
- A series of Webinars are planned and will be recorded over the course of the next year after the workshop. If workshop participants are interested, they have the opportunity to collaborate on this and use this opportunity to continue to engage in this network while having the experts ready to respond to their specific needs and requests.

After the workshop, participants were asked to fill in a survey regarding the objectives, tools and quality of the workshop:

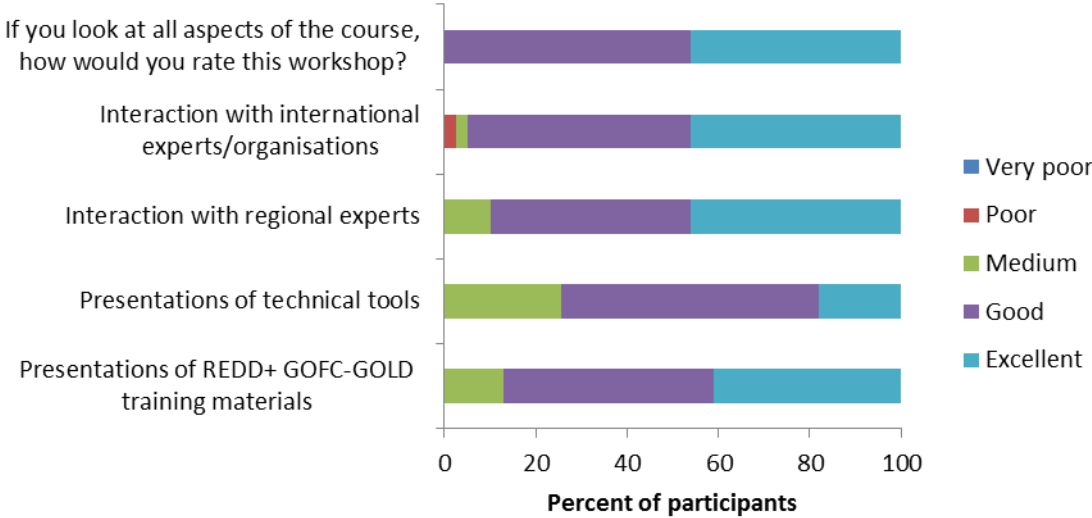
**Was this workshop useful for you regarding the following aims?**



**Which of the tools, if any, do you plan to use for your further work?**



**How do you rate (time allocated and quality):**



## 4. Workshop agenda

<b>Day 1, Monday 19 September - Opening, Introductions and Training WB/GOFC-GOLD training materials and Presentation of GOFC-GOLD training materials, including discussion</b>		
<b>Time</b>	<b>Activity</b>	<b>Person Responsible</b>
10:30 – 11:00	Registration and coffee	All organizers
11:00 – 11:30	Opening: Welcome word from organising team and sponsors: <ul style="list-style-type: none"> <li>• Martin Herold (Wageningen University)</li> <li>• Inge Jonckheere (FAO)</li> <li>• Marco van der Linden (World Bank FCPF)</li> <li>• Carly Green (Australian government)</li> </ul> General introduction to capacity building programmes and tools	Martin Herold
11:30 – 12:30	Tour de table	Workshop participants
<i>12:30 – 14:00 Lunch</i>		
14:00 – 14:15	World Bank FCPF / Winrock REDD+ decision support tool	Marco van der Linden
14:15 – 14:30	An introduction to the REDDcompass and GFOI	Carly Green
14:30 – 15:30	Interactive discussion on country-specific issues and needs	Martin Herold Workshop participants
<i>15:30 – 16:00 Coffee break</i>		
16:00 – 17:30	Presentation of GOFC-GOLD training materials, including discussion <i>REDD+ Background and Design</i> <ul style="list-style-type: none"> <li>• Introduction to the materials: Martin Herold (15 mins)</li> <li>• M1.1: Martin Herold (20 + 5 min)</li> <li>• M1.2: Carly Green (20 + 5 min)</li> <li>• M1.3: Martin Herold (20 + 5 min)</li> </ul>	Martin Herold

**Day 2, Tuesday 20 September - Training WB/GOFC-GOLD training materials:** Presentation of GOFC-GOLD training materials, including discussion and **FAO UN-REDD capacity building programme.**

09:00 – 10:30 Presentation of GOFC-GOLD training materials, including discussion  
*REDD+ Measuring and Monitoring*  
 • M2.1: Rémi D’Annunzio (20 + 10 min)  
 • M2.2: Marco van der Linden (20 + 30 min)  
 Inge Jonckheere

*10:30 – 11:00 Coffee break*

11:00 – 12:30 Presentation of GOFC-GOLD training materials, including discussion  
*REDD+ Measuring and Monitoring*  
 • M2.3: Melakeneh Gelet (20 + 10 min)  
 • M2.5: Stephen Adu-Bredu (20 + 10 min)  
 • M2.6: Jean Nduwamungu (20 + 10 min)  
 Marco van der Linden

*12:30 – 14:00 Lunch*

14:00 – 16:30 FAO UN-REDD capacity building  
 • General capacity building UN-REDD: Inge  
 • Support to countries in Africa by UN-REDD: Rémi/Antonello Salis  
 • Introduction to OpenForis Tools NFMA /SEPAL: Inge/Rémi  
 Inge Jonckheere

*16:30 – 17:00 Coffee break*

*Dinner and excursion*

**Day 3, Wednesday 21 September - Introduction of available tools, and FAO and WB tools**

09:00 – 10:30 Presentation of GOFC-GOLD training materials, including discussion  
*REDD+ Measuring and Monitoring*  
 • M2.7: Rémi D’Annunzio (20 + 10 min)  
 • M2.8: Inge Jonckheere (20 + 10 min)  
*REDD+ Assessment and reporting*  
 • M3.1: Inge Jonckheere (20 + 10 min)  
 Sarah

*10:30 – 11:00 Coffee break*

11:00 – 12:30 Presentation of GOFC-GOLD training materials, including discussion  
*REDD+ Assessment and reporting*  
 • M3.2: Kwame Agyei (30 + 15 min)  
 • M3.3: Carly Green (30 + 15 min)  
 Carly

*12:30 – 14:00 Lunch*

14:00 – 15:30 FAO Open Foris / SEPAL tools, etc: hands-on exercise on accuracy assessment  
 Rémi D’Annunzio/Inge Jonckheere

*15:30 – 16:00 Coffee break*

16:00 – 17:30 FAO Open Foris / SEPAL tools, etc: hands-on exercise on accuracy assessment  
 Rémi D’Annunzio/Inge Jonckheere

<b>Day 4, Thursday 22 September - Developing a capacity building plan for trainers, and GFOI / REDDCompass tools</b>		
09:00 – 09:15	Introduction to developing a capacity building plan for trainers	Martin Herold
09:15 – 09:45	World Bank (WB) decision support tool: hands on exercise	Marco
09:45 – 10:30	GFOI platform and REDDcompass – hands on exercise	Carly Green
<i>10:30 – 11:00 Coffee break</i>		
11:00 – 12:00	GFOI platform and REDDcompass – hands on exercise	Carly Green
<i>12:00 – 13:30 Lunch</i>		
13:30 – 14:15	Presentation of GOF-C-GOLD training materials, including discussion <i>REDD+ Measuring and Monitoring</i> • M2.4: Mohammed Yakubu (20 + 10 min)	Martin Herold
14:15 – 15:30	Remote Sensing open source tools on time series analysis and accuracy assessment (bfast)	Martin Herold
<i>15:30-16:00 Coffee break</i>		
16:00 –17:30	Interactive session: preparation of country presentations for day 5	All presenters
<b>Day 5, Friday 23 September – Country examples, and further opportunities</b>		
09:00 – 10:30	Country experiences: presentations from countries	Martin Herold
<i>10:30 – 11:00 Coffee break</i>		
11:00 – 12:00	Next steps: Further support and opportunities to follow up on the training	All presenters
12:00 – 12:30	Formal closing of the workshop and certificates	Martin Herold
<i>12:30 – 13:30 Lunch</i>		
13:30 – 15:00	Informal discussions, including south-south cooperation – exchanging ideas and collaborations	Workshop participants only
<i>15:00 – 15:30 Coffee break</i>		
15:30 – 17:00	Informal discussions, including south-south cooperation – exchanging ideas and collaborations	Workshop participants only



#### 4. List of participants

Name	Affiliation	Country
Bulcha ABAYA	Ministry of Environment, Forest and Climate Change	Ethiopia
Stephen ADU-BREDU	Forestry Research Institute of Ghana	Ghana
Kwame AGYEI	REDD+ Secretariat	Ghana
Suzana AUGUSTINO	Sokoine University of Agriculture - National Carbon Monitoring Centre (NCCM)	Tanzania
John Ayongyera BEGUMANA	Food and Agriculture Organization of the United Nations (FAO) Uganda	Uganda
Daniel BELAY	Ministry of Environment, Forest and Climate Change	Ethiopia
Gaston BUH WUNG	World Wildlife Fund (WWF) Cameroon	Cameroon
Sarah CARTER	Wageningen University, CIFOR	Netherlands
Nurdin Athuman CHAMUYA	Tanzania Forest Service Agency of the Ministry of Natural Resources and Tourism	Tanzania
Remi D'ANNUNZIO	Food and Agriculture Organization of the United Nations (FAO)	UK
Saah A. DAVID	Forestry Development Authority	Liberia
Sewnet ENYEW AMBAYE	Ministry of Environment, Forest and Climate Change	Ethiopia
Tariku GEDA	Ministry of Environment, Forest and Climate Change	Ethiopia
Melakeneh GELET	Food and Agriculture Organization of the United Nations (FAO) Ethiopia	Ethiopia
Delfio Esmenio GOMES MAPSANGANHE	UT-REDD+	Mozambique
Carly GREEN	Australian Government / GFOI	Australia
Abdella GURE	Hawassa University, Wondo Genet College of Forestry & Natural Resources	Ethiopia
Bekele HAILE	Naturschutzbund Deutschland (NABU)	Ethiopia
Martin HEROLD	Wageningen University	Netherlands
Marianne JOHANSEN	Norwegian Embassey in Ethiopia	Ethiopia
Inge JONCKHEERE	Food and Agriculture Organization of the United Nations (FAO)	Italy
Jeremiah F. KARMO	Forestry Training Institute	Liberia
Stephen KIAMA	Kenya Forestry Research Institute	Kenya
Samson Warkaye LAMMA	Ethiopian Mapping Agency	Ethiopia
Antoinette MACUMI	Ministry of Water, Environment, Lands Management and Urban Planning	Burundi
Yitebitu MOGES	REDD+ Secretariat, Ministry of Environment and Forest	Ethiopia
Michael MUGARURA	Climate Change Department (CCD), Ministry of Water and Environment	Uganda
Kalkidan MULATU	Wageningen University	Netherlands
Faith MUTWIRI	Kenyan Forest Service	Kenya
Joseph MUTYABA	National Forest Authority (NFA)	Uganda

Charles NDEGWA MUNDIA	Kimathi University of Technology	Kenya
Sylvestre NDONSE	Advisor of the Ministry of Environment	Burundi
Jean NDUWAMUNGU	University of Rwanda	Rwanda
Lulu Likassa NEFABAS	Norwegian Embassey in Ethiopia	Ethiopia
Sá NOGUEIRA MAURÍCIO ANASTÁCIO LISBOA	Eduardo Mondlane University	Mozambique
Phoebe ODUOR	Regional Centre for Mapping of Resources for Development (RCMRD)	Kenya
Edward OUKO	Regional Centre for Mapping of Resources for Development (RCMRD)	Kenya
Felix RURANGWA	Rwanda Natural Resources Authority (RNRA)	Rwanda
Antonello SALIS	Food and Agriculture Organization of the United Nations (FAO), Ethiopia	Ethiopia
Hercílo SANCHO CARLOS ODORICO	Ministry of Land, Environment and Rural Development	Mozambique
Borwen Levi SAYON	Forestry Development Authority	Liberia
Heiru SEBRALA AHMED	Ministry of Environment, Forest and Climate Change	Ethiopia
Chalachew SIMION HABORO	Ethiopian Mapping Agency	Ethiopia
Hailu TEFERA	World Bank	Ethiopia
Mesfin TEKLE	Naturschutzbund Deutschland (NABU)	Ethiopia
Benjamin Adjah TORGBOR	Forestry Commission	Ghana
Samson TSEGAYE MEKASHA	Ministry of Environment, Forest and Climate Change	Ethiopia
Marco VAN DER LINDEN	World Bank	USA
Abdurhman WARIWO ERAR	NABU- Lake Tana Biosphere Reserve	Ethiopia
Ashebir WONDIMU ZELEKE	Ministry of Environment, Forest and Climate Change	Ethiopia
Mohammed YAKUBU	Forestry Commission	Ghana