# WWF Forest and Climate Initiative

## Internal Background Paper: October 2012

## Monitoring, Reporting and Verifying (MRV)

## MRV Systems:

REDD MRV systems need to be **robust** and capable of generating emissions reductions estimates **with known accuracies** that are **consistent, comparable and generated in a transparent manner**. Clear definitions are also needed of what is meant by each of these requirements. There has been a lot of speculation (especially in the case of emerging technologies and techniques) up to this point. This has made things extremely confusing and difficult in order to move the REDD+ agenda forward into implementation.

1. **Robust**: MRV systems need to be resilient and capable to continue generating emissions reductions estimates with ***known new accuracy estimates*** when currently used data sources are no longer available and in need of being replaced/updated by other alternatives. An adaptive management strategy has to be part of MRV systems design and implementation.

2. **Accuracy** of carbon emissions estimates: ***Combined accuracy benchmarks for activity data and emissions factors should help REDD+ move forward faster***. A lot of emphasis has been put on the need of emissions reductions estimated to be accurate. Delaying performance-based payments will undermine the commitments of REDD+ countries, and the incentive to implement robust MRV systems. Based on this, WWF believes a decision needs to be made in order to establish "how good is good enough". Benchmark accuracy requirements for activity data and emissions factors are needed.
    a. ***Activity Data***: Initial emphasis is needed in defining accuracy benchmarks for Activity Data (initially forest/non forest) generated from remote sensing data forest cover monitoring systems for REDD+).
        i. NOTE that detection and tracking of deforestation must be improved in order to enable early detection.

- Current average accuracies are around 90% for forest/non forest maps [Pekkarinen *et al.* 2009[1]]).
- Small-scale deforestation (i.e. areas with low deforestation rates) is difficult to depict unless observed over long time periods (Pelletier *et al.* 2011)[2].

b. ***Emissions factors estimates***: WWF proposes that the current tiered approach proposed by the IPCC 2006 guidelines needs to be complemented by defining benchmark accuracy levels for emissions factors to be considered as "good enough" to allow countries to move into the next stages of REDD+ implementation. The tiered approach focuses only on the methods used and/or the origin of the data. Even though it is expected that higher tiered emissions factors entail higher accuracies and precisions, this increase in accuracy is not guaranteed. Emphasis should be put on reaching satisfactory levels of certainty in the data.

c. ***Overall accuracy requirements should be correlated with deforestation risk (and addtionality)***. Higher accuracy estimates benchmarks should be established for areas with higher risk of deforestation. Deforestation risk should be used as a data quality stratification measure, allowing for countries to concentrate logistic resources in areas more likely to be additional as well as enhancing accuracy estimates from areas from which actual emissions reductions are likely to come.

d. Interim accuracy levels

3. **Consistent:** data generated by MRV systems needs to be consistent with data used for establishing reference levels in order to actually allow tracking performance changes through time as shown by each country/region.

4. **Comparable:** Datasets generated in each country need to be comparable with that of others. This emphasizes the need of a common benchmark for global data comparability see **1.b.** above.

5. **Transparent:** Methods used need to be **transparent** so assessment on data generating approaches as well as of quality of estimates is feasible. Well-known and well-established approaches should be favored over innovative and still under development potentially better performing approaches.
   a. *Readily available and proven technologies and data should be favored over restricted access tools and or approaches still under development.* This helps the transparency, replicability and comparability of the process and accessibility for verification by third parties as well as civil society.
   b. Raw, intermediate and final data outputs have to be open for public access.

[1] Pekkarinen A, Reithmaier L and Strobl P 2009 Pan-European forest/non-forest mapping with Landsat ETM+ and CORINE land cover 2000 data. *ISPRS Journal of Photogrammetry and Remote Sensing* **64** 171–183.

[2] Pelletier J, Ramankutty N and Potvin C 2011 Diagnosing the uncertainty and detectability of emission reductions for REDD+ under current capabilities: an example from Panama Environ. Res. Lett. 6 024005

6. **Participation:** WWF believes the MRV process should be as participatory as possible. This should be part of the strategy for compliance with social safeguards requirements. Especially in the case results and data generated have direct implications on specific communities and biodiversity. MRV systems have to incorporate a participatory process in system design, implementation, data generation and data processing.
    a. Long term capacity building for systems design, implementation and management has to be part of MRV systems strategy. Emphasis on developing MRV know-how rather than punctual technical trainings should be made. WWF has been actively involved in this type of process in countries like the Democratic Republic of Congo, Peru and Tanzania. This approach allows for better use of MRV data deliverables in terms of assessing drivers of deforestation, deforestation risk for addtionality establishment and building an adaptive management framework.
    b. Guaranteeing long-term involvement guarantees long-term compliance with social safeguards.

# MRV Deliverables Use:

1. ***A conservative approach independently of accuracy levels reached:*** Use of conservative values should be the rule of thumb for emissions reductions estimates. These values should be derived from accuracy estimates generated for emissions reductions estimates.
    a. This eliminates the risk of generating hot air as well as creates the incentive for countries to work on enhancing their estimates accuracies (if cost-benefit analyses indicate it being worth it).
    b. Uncertainties on data from both area changes and carbon can be partly tackled through the use of a precautionary approach or conservativeness principle (e.g. by using the lowest end of the confidence interval of emission reductions, de facto applying a discount factor to the most uncertain estimates).
    c. This concept would allow for flexible monitoring requirements at the start of the REDD+ process while rewarding future improvement in the level of accuracy (Grassi et al. 2008[3] ).
    d. It would also allow for a general comparable approach that can be implemented at a global scale right from the start.

2. Delaying performance based payments will undermine the commitments of REDD+ countries and the incentive to implement adequate MRV systems.
    a. **As capacities increase, *use of lower accuracy data should be allowed under the precautionary approach proposed in 2.a.***
    b. Use of conservative values, until better alternatives become available or financially viable or until a deadline for reaching the benchmark accuracies should be an option**.**
    c. This could be clearly linked with the available option for interim national and sub-national reference levels.

[3] Grassi G, Monni S, Federici S, Achard F, Mollicone D (2008) Applying the conservativeness principle to REDD to deal with the uncertainties of the estimate, Environ. Res. Lett. 3 035005

3. Methods used have to be **transparent** so assessment on data generating approaches as well as of quality of estimates is feasible.
    a. Well known and well established approaches should be favored over innovative and still under development potentially better performing approaches.

# Emphasis on integral MRV:

MRV of emissions should be linked with MRV of biodiversity safeguards, as well as with mitigation action management and evaluation within and adaptive management framework.

1. Emissions reductions MRV should be linked with MRV of drivers of deforestation.
    a. Geospatial data generated by MRV systems needs to be integrated into a GIS system allowing assessment of deforestation and degradation trends in function of geospatial location of drivers of deforestation as well as of REDD+ mitigation actions as well as biodiversity data.
    b. This will enhance the management capabilities of mitigation actions as well as optimize the use of limited MRV logistics.

2. MRV efforts should be coupled with deforestation risk assessment for:
    a. Stratification of MRV efforts
    b. Keeping track of potential new risks as a means of allowing rapid response measures
    c. Driver of deforestation characterization
    d. Additionality assessment
    e. NAMA impact assessment and adaptive management
    f. Leakage prevention

3. Biodiversity safeguards monitoring needs initially to be linked as much as possible with emissions reductions MRV. Logistics of safeguards monitoring are even more challenging than those related with emissions reductions MRV. ***WWF proposes MRV of degradation and biodiversity safeguards can initially be implemented using proxy indicators derived from MRV of carbon stocks:***
    a. Biodiversity monitoring should be coupled with carbon monitoring (see the proposed approach by Gardner et al. 2011). This should keep biodiversity monitoring logistically viable.
    b. Forest degradation and biodiversity can initially be tracked through well established proxies derived from years of landscape ecology research. WWF proposes the use of the well-established relationships between forest degradation, forest fragmentation and biodiversity, which are all variables also related to forest areas' accessibility.
    c. More accessible forest areas show higher levels of degradation and deforestation likelihood. Data shows that deforestation and degradation are highly correlated with how accessible forest

areas are (see CIAT 2000[4], Mollicone *et al.* 2007[5], Southworth *et al.* 2011[6]) and fragmentation (Numata *et al.* 2010[7]).

d. Degradation is highly correlated with recent deforestation events. Data shows degradation is over 80% explained by distance to recent deforestation events.

e. **WWF proposes** following a ***transition matrix*** mechanism (see Annex 1) similar to the one proposed by *Bucki et al.* (*2012*)[8] which divides the "forest land" category into two sub categories, “natural forests" and “boundary forests” (= all other forests) to distribute the five REDD+ activities in greater detail.

[4] http://isa.ciat.cgiar.org/catalogo/producto.jsp?codigo=P0173

[5] Mollicone D, Achard F, Federici S, Eva H D, Grassi G, Belward A, Raes F, Seufert G, Stibig H-J, Matteucci G and Schulze E-D 200 An incentive mechanism for reducing emissions from conversion of intact and non-intact forests in *Clim. Change* **83** 477–493

[6] Southworth J *et al.* 2011 Roads as Drivers of Change: Trajectories across the Tri-National Frontier in MAP, the Southwestern Amazon *Remote Sens.* **3** 1047-66

[7] Numata I, Cochrane M A, Roberts D A, Soares J V, Souza C M J and Sales M H 2010 Biomass collapse and carbon emissions from forest fragmentation in the Brazilian Amazon *Journal of Geophysical Research* **115** G03027

[8] Bucki M, Cuypers D, Mayaux P, Achard F, Estreguil C, Grassi G, Assessing REDD+ performance of countries with low monitoring capacities: the matrix approach, Environ. Res. Lett., 7 (2012) 014031

# Annex 1:

### Proposed Transition matrix (taken from Bucki et al. [2012])

| to / from | Natural/Intact Forest Land | Non Intact Forest Land | Other Land |
|---|---|---|---|
| Natural/Intact Forest Land | Forest conservation | Forest Degradation | Deforestation |
| Non Intact Forest Land | Enhancement of Carbon stocks (forest restoration) | Sustainable Management of Forests | Deforestation |
| Other Land | →→→ [(a)] | Enhancement of C stocks (afforestation / reforestation) | |

[a] The areas that would appear as "converted to natural forest land" (plantations, restoration or land abandonment) should mechanically be requalified as *non intact forest* for a duration ensuring that natural structural properties, such as deep canopies, tree diversity and suitable wildlife habitat, have been regained.

Natural forests would be as defined based on Potapov et al. (2008) definition of *intact forest*: "...an unbroken expanse of natural ecosystems within the zone of current forest extent, showing no signs of significant human activity, and large enough that all native biodiversity, including viable populations of wide-ranging species, could be maintained." This is also known as *core forest area* in landscape ecology.

Degraded forest could therefore be considered as a transition from intact forests to managed forests (Mollicone *et al.* 2007[10]). This transition would occur in the edge forest. *Bucki et al.* propose an edge of 500m. WWF considers that the size of the edge to be used should be established based on the drivers (such as gold mining, which can generate degradation at larger distances).

The matrix approach would make it easier for REDD+ countries to participate in the mechanism. Its metrics and terminology are transparent and would enable informed choices on forest management. The simplicity and the potentially low monitoring requirements of the matrix approach (e.g. it may work even with tier 1-like values of C stock changes) would allow resource savings that can be reallocated to tackle the drivers of deforestation.

The matrix does not allow converting non-forest land into natural forests in one step: planted forests would mechanically qualify as "boundary forests" for at least two commitment periods (first as Afforestation/ Reforestation then as Restoration) before counting as conservation forests (if they still meet the requirements for 'Natural Forest').