



Carbon stocks preserved in the context of RED-DC: do we need accurate or conservative estimates ?

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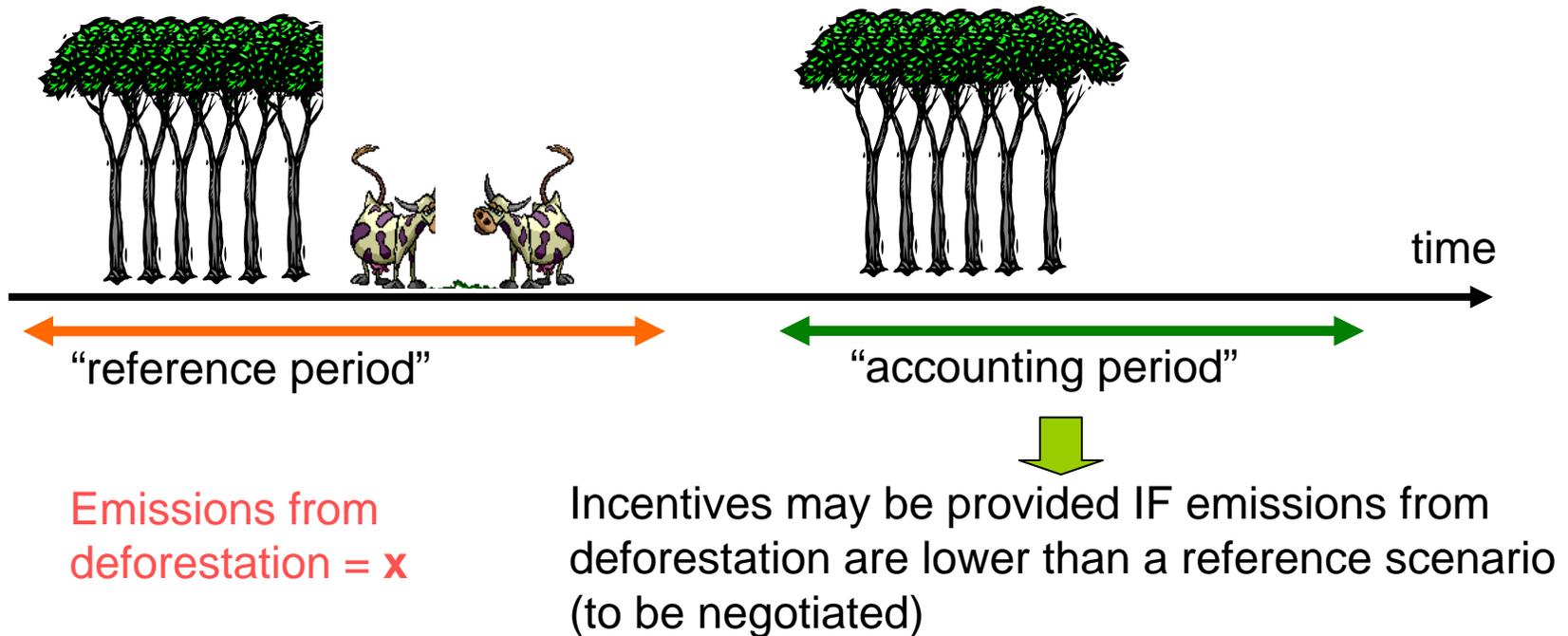
Outline of the presentation

1. Introduction
2. What do we need for estimating emissions from deforestation ?
3. Is it possible to estimate **carbon stock** changes ?
 - a. Which are the reporting requirements for Annex I countries?
 - b. Could data from Non-Annex I countries meet these requirements?
 - c. Do we need accurate or conservative estimates?
 - d. May a simpler reporting be also conservative ?
4. Conclusions

Within the UNFCCC:
Annex I Countries ~ Industrialized Countries
Non-Annex I Countries ~ Developing Countries

1. INTRODUCTION

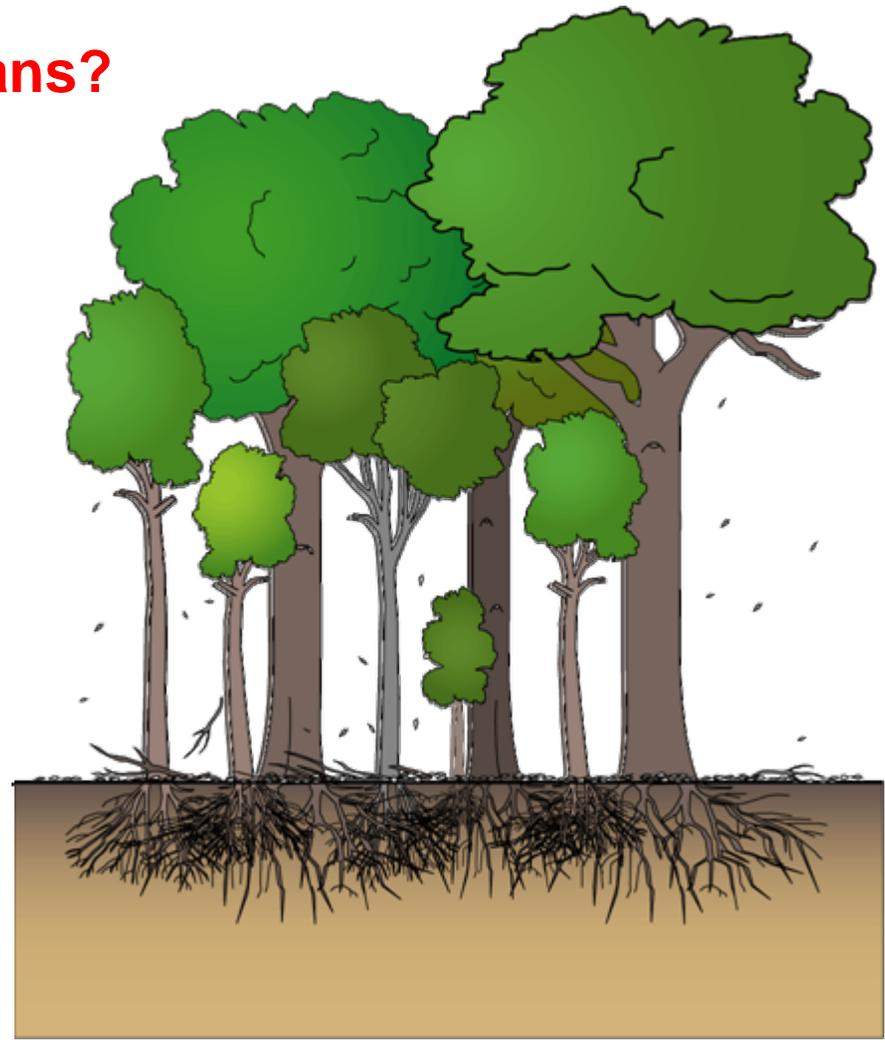
Any positive incentives to support the RED-DC will likely require “sound numbers”, i.e. acceptable estimates of the amount of carbon “preserved” (or reduced/avoided emissions) as compared to a “reference scenario”.



In forest, carbon is present in different carbon pools

What does deforestation mean?

reduction of carbon in all the pools



Above-ground biomass

Below-ground biomass

Litter and soil

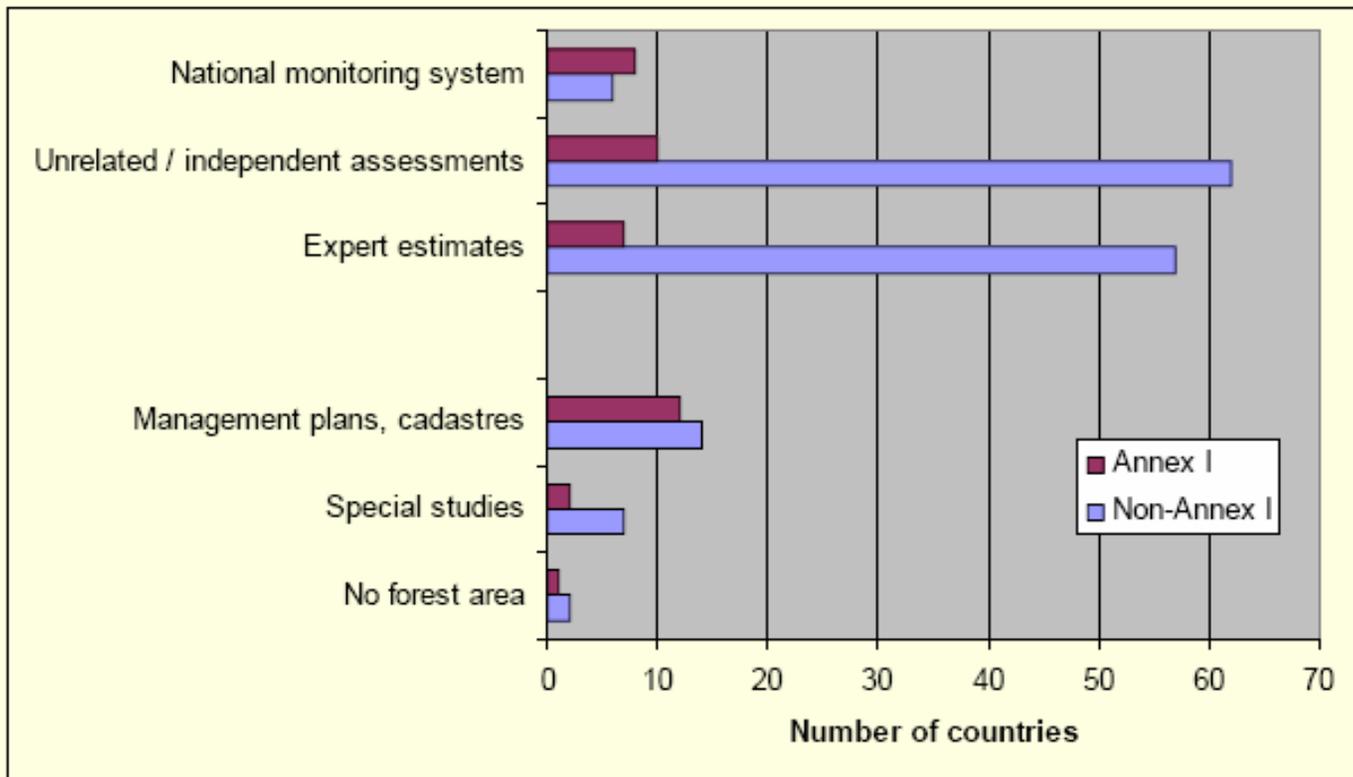
2. HOW TO ESTIMATE EMISSIONS FROM DEFORESTATION ?

1. Estimate **AREAS** subject to **deforestation** (disaggregated per forest type, conversion type...).
2. Estimates **CARBON STOCKS** for each of these areas.

	Baseline	Accounting period
Area deforested (ha)	Challenging, but feasible , even at national level	
Carbon stock/ha		
Emissions	Area x C stock	

ASSUMING that areas can be estimated, the next step is to estimate C stock.

National data and methods for estimating forest area change

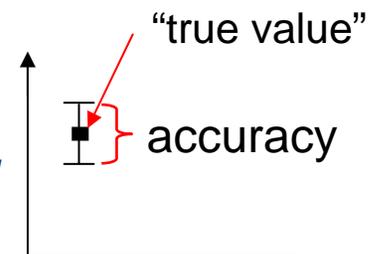


From Susan Braazt (FAO) presentation at Cairns Workshop

3. ESTIMATING and REPORTING CARBON STOCK CHANGES ?

3a. Which are the reporting requirements for Annex I Countries?

UNFCCC, “*estimates of emissions/removals should be **accurate** in the sense that they are systematically neither over nor under the true value, so far as can be judged, and that uncertainties are reduced so far as is practicable*”.



IPCC Good Practice Guidance (2003):

- 3 “**Tiers**” of increasing complexity, spatial resolution and certainty in estimates.
- Emissions from “**Key categories**” to be estimated with the highest Tiers.
- Carbon **Pools**: *Living Biomass* (above- and below-ground), *Dead organic matter* (dead wood and litter), *Soil*.

Example of different Tiers (Forest converted to Cropland)

TABLE 3.3.6
TIER DESCRIPTIONS FOR SUBCATEGORIES UNDER LAND CONVERTED TO CROPLAND (LC)

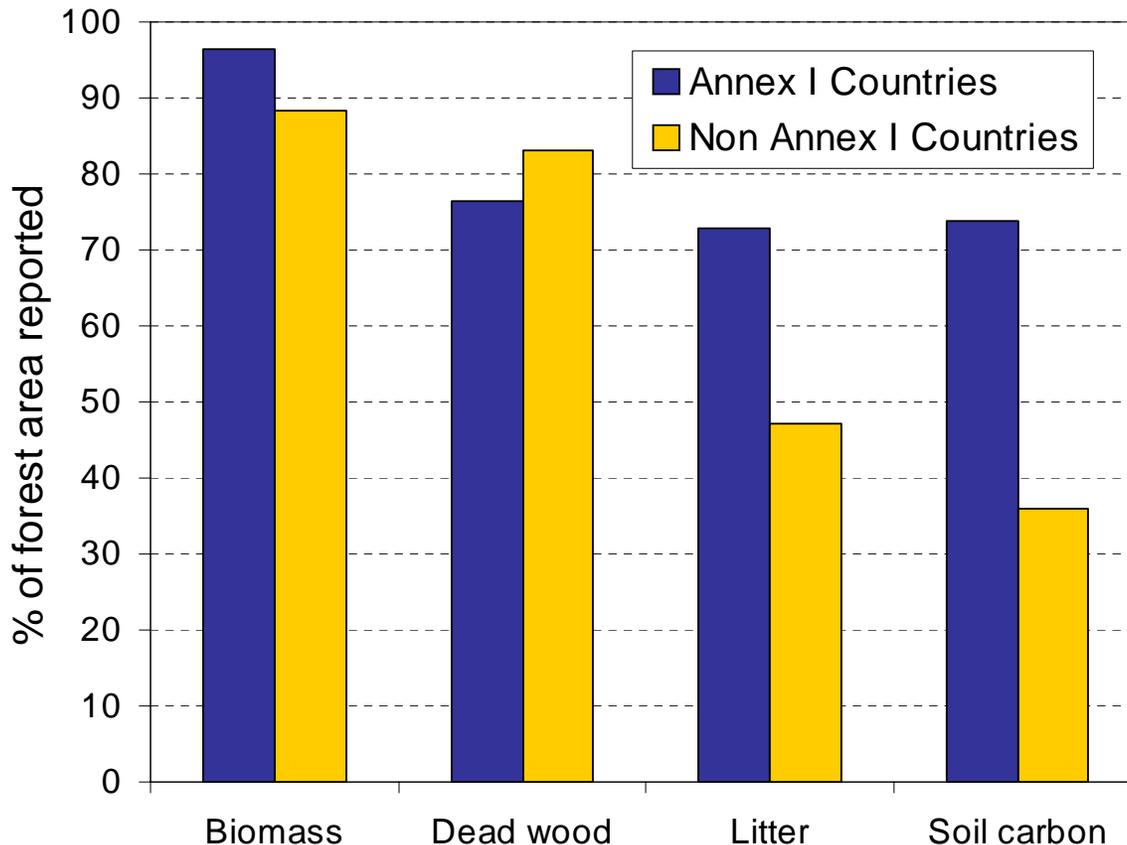
Tier Sub-categories	Tier 1	Tier 2	Tier 3
Biomass	Use default coefficients to estimate carbon stock change in biomass resulting from land use conversions and for carbon in biomass that replaces cleared vegetation during the year of land use transition.	Use at least some country-specific carbon stock parameters to estimate carbon stock changes from land use conversion to cropland. Apportion carbon from biomass removal to burning, decay, and other nationally important conversion processes. Estimate non-CO ₂ trace gas emissions from the portion of biomass burned both on-site and off-site. Use area estimates that are disaggregated to nationally relevant climate zones and other boundaries to match country-specific carbon stock parameters.	Use country-specific approach at fine spatial scale (e.g., modeling, measurement).
Carbon stocks in Soil	For change in soil carbon from mineral soils use default coefficients. The areas must be stratified by climate and soil type. For change in soil carbon from organic soils use default coefficients and stratify the areas by climatic region. For emissions from liming, use default emission factors.	For both mineral and organic soils use some combination of default and or country-specific coefficients and area estimates of increasingly finer spatial resolution. For emissions from liming, use emission factors differentiated by forms of lime.	Use country-specific approach at fine spatial scale (e.g., modeling, measurement)

(From IPCC Good Practice Guidance, 2003)

Tier 3: data on ALL pools from a forest inventory, disaggregated per forest, soil and conversion type at a fine spatial scale.

3b. Non-Annex I Countries meet these requirements?

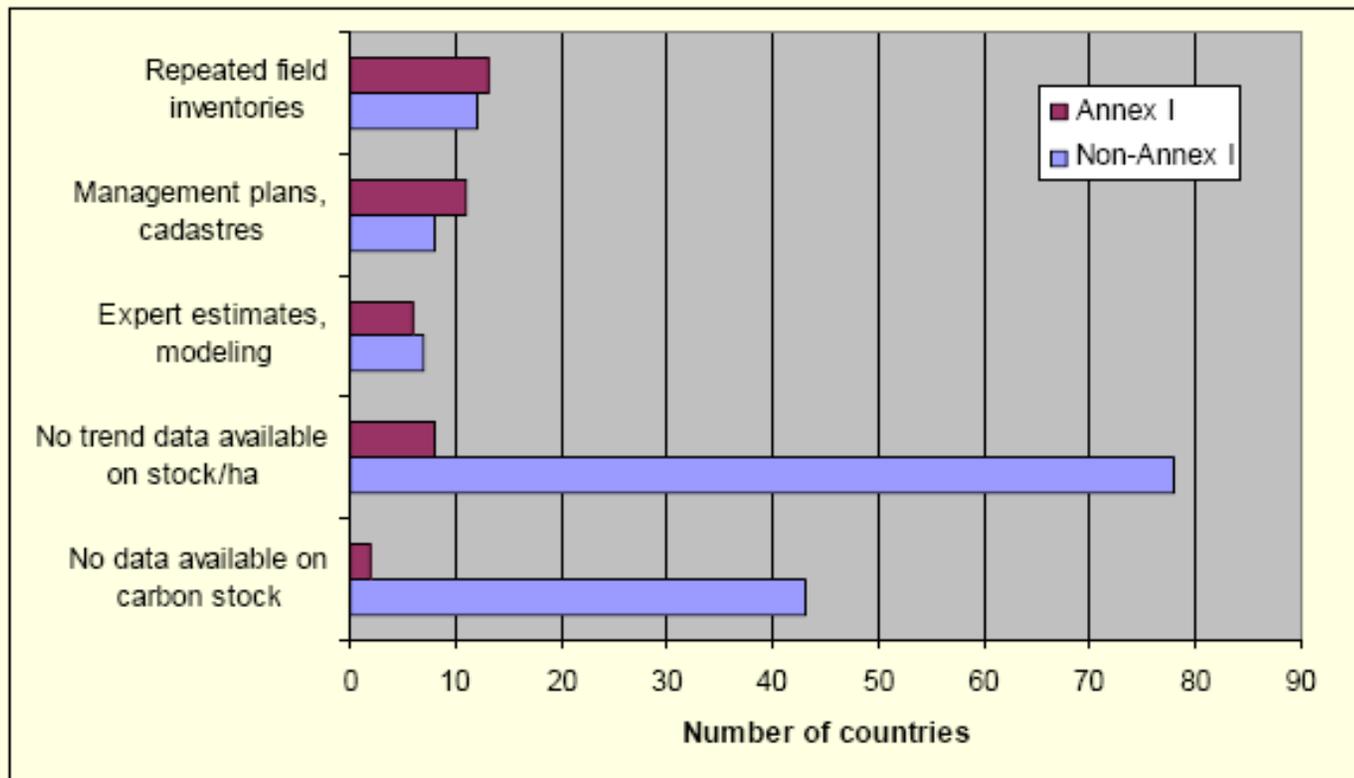
Availability of data for the different pools (FRA 2005):



Elaborated from FAO's working paper "Global Assessment of growing stocks, biomass and carbon stock", Marklund and Schoene (2006)

Most Non-Annex I countries already now report on biomass, but few report on soil.

National data and methods used for estimating changes in carbon stock per hectare



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Which is the level of accuracy of these data?

- Aboveground biomass: Tier 2 (e.g. growing stocks) or Tier 1 (e.g. Biomass Expansion Factors).
- Other pools: Tier 1.

Preliminary conclusion:

available data suggest that most Non-Annex I Countries are unlikely to provide *accurate* estimates of emissions.

Estimating/reporting capacity may rapidly improve (**capacity building is a priority!**), but if a high accuracy will be required the participation to a RED arrangement will likely be limited.

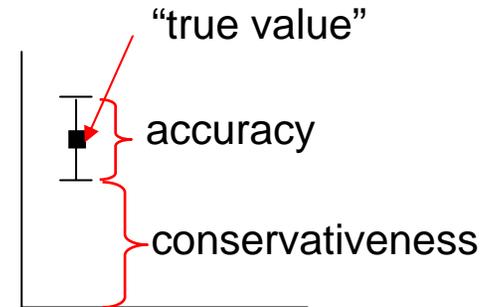
NO accurate numbers, NO positive incentives ?

3c. Do we need accurate or conservative estimates ?

UNFCCC:

Accuracy: estimates (reduction of emissions) should be neither over nor underestimated systematically.

Conservativeness: estimates (reduction of emissions) should not be overestimated.



In our opinion in the context of the RED-DC the KEY point is to have **conservative estimates**, i.e. be sure that “avoided emissions” are not overestimated and that the incentives are not given to “hot air”.



The reporting system should:
- be **simple**
- provide **conservative estimates**

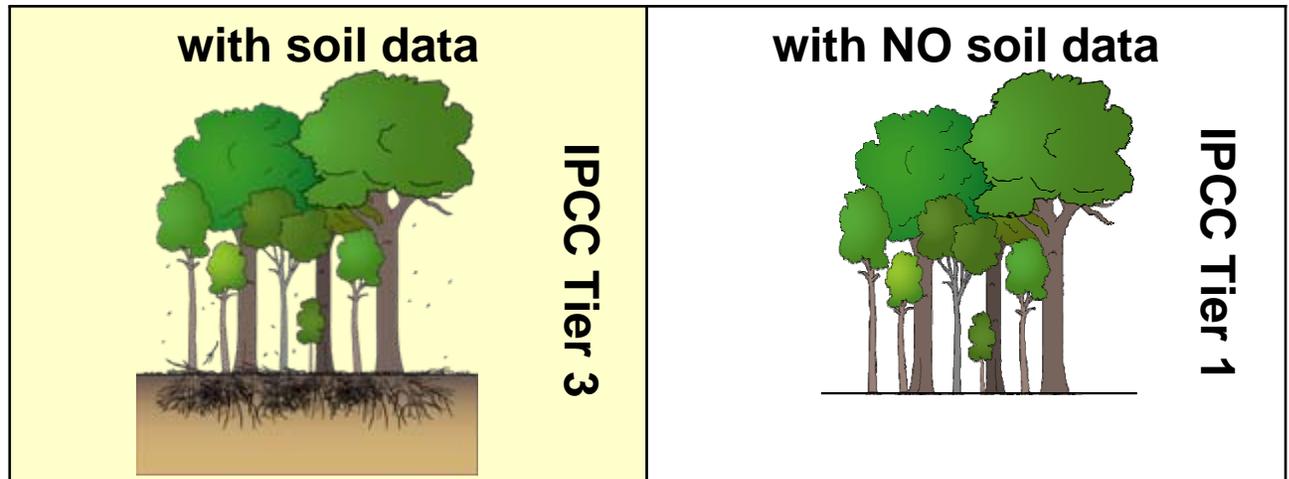


3d. How to apply the conservativeness principle ?

2 Options:

1. Within the UNFCCC / Kyoto Protocol, if a Country reports at a Tier lower than required (e.g., using default factors instead of country-specific values), during the accounting procedure an **adjustment** may be applied by using “**conservativeness factors**”, which considers the uncertainty of the estimates.
2. **Do not report some pool** (e.g. the soil). IF the area deforested is decreased, the resulting estimate of *reduced emissions* will be in most cases underestimated, i.e. it will be **conservative**.

Example: C stock changes (ton of C) in 1 ha deforested



(ton of C)	before deforest	after deforest	change	before deforest	after deforest	change
Aboveground Biomass	100	0	100	100	0	100
Soil	100	50	50	-	-	-
Total	200	50	150	100	0	100

If this forest is NOT deforested, this is the value of the “preserved carbon” (i.e., avoided emissions)

estimate accurate

estimate not accurate, **but conservative**

This approach is not the “final” solution: it has to be further developed, and it has some assumptions and exceptions!



4. CONCLUSIONS

Data Availability: The lack of data on carbon pools will not preclude Parties to participate in REDD.

Dealing with Uncertainty: The resulting estimate of total reduction of emissions, although not accurate, will be conservative.

Conservative Approach: Already under KP. Required amount of data necessary to participate to REDD will be considerably less as compared to “accurate” estimates. (e.g. a country may participate even with no reliable data on some carbon pools)

“To start to roll, a snowball does not need to be perfectly round”