Call for public inputs	Draft revision of methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"

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Issue No.	**Issue to be addressed (including need for change)**	**Proposed change (including proposed text, if applicable)**
1	Sequence of guidance in the tool	It will be useful to have a flow chart after Section 4 (elaborating on the methods presented in Table 2 on page 11 of the tool) on how the tool should be used and which methods are relevant for estimation of carbon stock in the baseline scenario, ex ante project and ex post project contexts.
2	There is significant duplication of text on methods discussed in relation to change in carbon stock of trees in Section 5 (between two periods) and Section 7 (at a point of time).	The duplication of text on the methods discussed in Section 5 and in Section 7 can be avoided by combining the two sections. The Section 6 can also be included in the integrated section. The use of flow chart suggested above can also help to streamline the presentation of the text.
3	There is no need for 5(d) demonstration of "no decrease' as a separate method	The criteria of 5(d) on the occurrences of harvest, disturbance are covered in monitoring plan and do not need to be included in the estimation methods as these are not methods per se.
4	The estimation of carbon stock of shrubs does not also require three separate sections	The sections 8, 9, and 10 on estimation of carbon stock of shrubs can be combined following the flow chart and approach similar to trees.
5	The section 7.1.2 does not provide the examples of secondary variables measured on sample plots.	In the absence of elaboration on the types of secondary variables measured on sample plots, project entities may be unclear on the use of variables to be considered under double sampling

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6	A key aspect of CMP8 request to EB is on the use of cost-effective approaches in afforestation/reforestation methodologies, **including the use of remote sensing for monitoring, which has NOT been covered in the tool**	A/R projects that wish to implement remote sensing methods are handicapped by lack of EB guidance in this regard. AMP8 request to EB provides opportunity to fill this gap as remote sensing methods are likely to be relevant for monitoring of A/T projects as the forests implemented as part of these projects grow and remote sensing technologies are expected to be cost effective during this period. Therefore, it is requested to cover the remote sensing methods for estimation of carbon stock and its change in the tool. It will be also relevant to elaborate on combination remote sensing and field based sample plot measurement data and methods and their application in carbon stock assessment of A/R projects. An overview of remote sensing methods relevant for A/R projects is presented below. Remote sensing data and methods have assumed significance in estimation of carbon stock and its change over time. The space borne or air borne methods provide continuous spatial information over a large area and can fill spatial and temporal gaps in forest inventory data and thereby enhance opportunities for cost effective estimation of carbon stock and its change. Remote sensing methods involving optical, synthetic aperture radar (SAR) and LIDAR systems have received attention in estimation of carbon stock and its change over a monitoring period. The carbon stock and its direct relationship with spectral response or its indirect relationships of leaf area index (LAI), structure (crown closure and height) or shadow fraction can be assessed using remote sensing methods. The choice of methods depends on required level of precision and availability of sample plot measurement data to validate the estimates. Using optical data, indirect estimates of carbon stock can be generated using empirical relationships established with vegetation indices (e.g., normalized difference vegetation index (NDVI) and reflectance data. Synthetic Aperture Radar (SAR) sensors can be used to produce time series remote sensing images based on radar (radio detection and ranging) reflectivity. The polarimetric SAR data provides opportunities for quantification of aboveground carbon and incremental change at early stages of A/R projects where carbon stock is low. LIDAR (LIght Detection and Ranging) sensors measure three dimensional distributions of vegetation and sub-canopy topography and can be used for quantification of tree and stand height, volume, biomass, and carbon. Unlike optical remote sensing and SAR, LIDAR does not suffer from saturation problems associated with high biomass values. Thus, airborne and space borne LIDAR can be used for monitoring of later stages of A/R projects when biomass density increases. The estimation of uncertainty from LIDAR data also enables cost effective verification. Combining optical, SAR, LIDAR data with sample plot field measurements and use of double sampling methods can increase overall sample size and facilitate cost effective estimation of biomass or it's over time over large areas. Combination of remote sensing and sample plot measurement data should allow for flexible combination of methods for meeting precision and confidence intervals of methodologies. It is requested that remote sensing methods relevant for A/R projects should be considered and guidance on use of relevant methods should be developed in consultation with experts and included in the tool.

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