Data and model requirements to support carbon monitoring and management

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Data requirements and methods as outlined in

IPCC Good Practice Guidance 2003 and

IPCC GHG Inventory Guidelines 2006

but focus on Tier 1 and 2 with limited guidance for Tier 3 modelling approaches. How do we achieve national-scale integration of relevant data?
Estimation of GHG budgets requires models that integrate data over space and time.

Forest inventory and growth & yield data

Activity Data

- Natural disturbance monitoring data
- Forest management activity data
- Land-use change data

Ecological modelling parameters

CBM-CFS3
National-scale integration of forest C cycle data

• Systems can be designed to meet both monitoring (reporting) and decision support (analysis of future scenarios) requirements.
  
  – Data on past activities transition into scenarios of future activities – ensuring consistency between monitoring and projection.
  
  – Systems should be modular to allow easy testing of alternative science hypotheses and data sources.

• With increasing number of sources for activity data, need to reconcile differences and derive “authoritative” activity data time series.
National Activity Data Composite

Authoritative summary of annual events compiled from multiple data sources

Models, MRV Systems, other users
National-scale analyses of forest sector mitigation options and their costs

(1) Changes in forest ecosystem (emission reduction and increased removal due to strategies)

(2) Changes in harvested wood (C storage, and emission reduction from HWP and bioenergy use)

(3) Changes in interactions with other sectors (emission changes through product displacement and substitution)

(4) Economics (net costs of emission reduction and increased removal due to strategies)

NFCMARS\textsuperscript{1} and CBM-CFS\textsuperscript{3}

\textsuperscript{1} Stinson et al. (2011) *Global Change Biology* 17, 2227-2244
\textsuperscript{2} Kurz et al. (2009) *Ecological Modelling* 220, 480-504
Conclusions

• Data and model needs vary with policy question and time horizon.

• Ensure consistency between reporting and projection (e.g. for mitigation analyses) of GHG estimates.

• While impacts of environmental variability are of scientific interest, impacts of human activities are the primary focus of mitigation analyses (e.g. REDD+).
Thank you very much!

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