



An Overview of Cropland Management and Grazing Land Management in the *KP Supplement*

Nalin SRIVASTAVA, IPCC TFI TSU

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Introduction

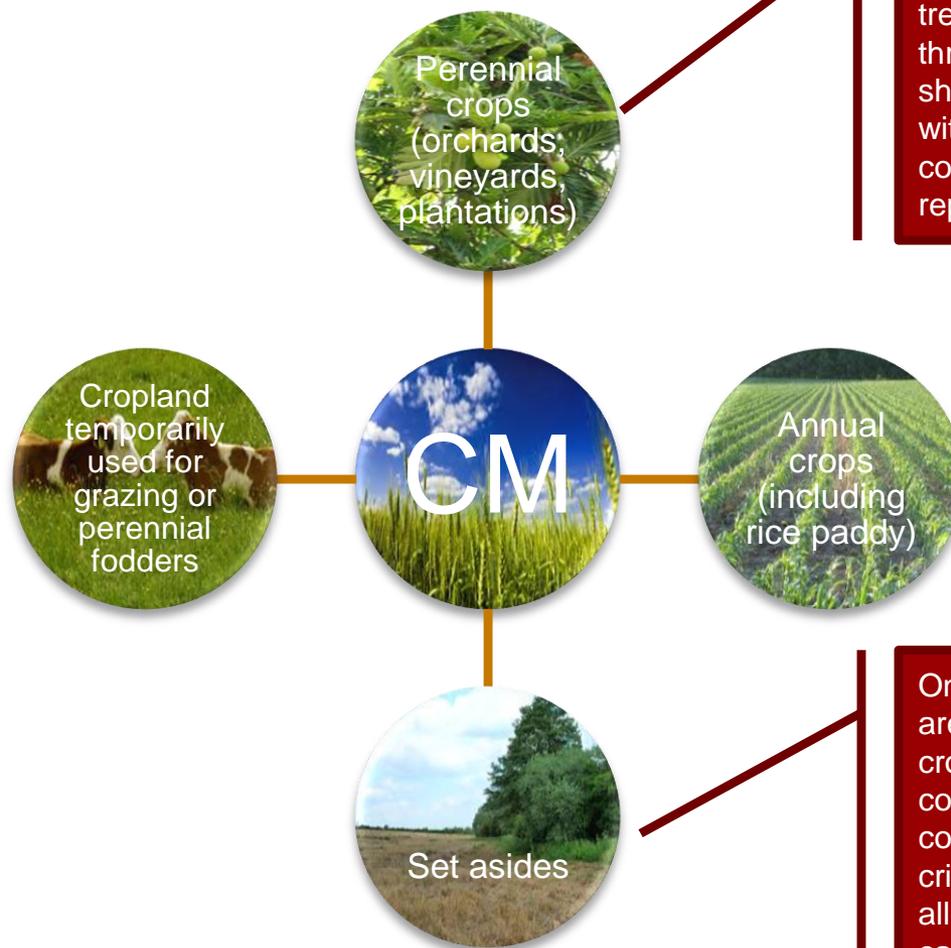
- The *KP Supplement* updates the supplementary methodological guidance provided in Chapter 4 of *GPG-LULUCF* on Cropland Management (CM) and Grazing Land Management (GM) in line with the provisions of Decision 2/CMP.7 and other relevant decisions of the UNFCCC and the guidance in the *2006 IPCC Guidelines*.
- The guidance included in the *KP Supplement* covers: definitional issues and reporting requirements; base year; methods to identify and track lands; and methods to estimate emissions and removals.

Definitional Issues and Reporting Requirements

Cropland Management

- Decision 16/CMP.1 defines Cropland Management (CM) as:
“...*the system of practices on land on which agricultural crops are grown and on land that is set-aside or temporarily not being used for crop production.*”
- CM includes all lands under annual and perennial crops, and all fallow lands set at rest for one or several years before being cultivated again.
- It is *good practice* to:
 - include in CM all the lands in the Cropland category of Section 3.2, Chapter 3, Volume 4 of the *2006 IPCC Guidelines*, namely cropped land, including rice fields, except for land reported under deforestation.
 - to specify how land subject to CM is distinguished from other activities under the KP using the guidance in the *KP Supplement* and the 2006

Cropland Management includes...



Could potentially include perennial crops (e.g. fruit orchards, Christmas tree etc.) meeting the cover thresholds for forest; countries should avoid double counting with FM and ensure consistency with previous reporting.

Only when they return, or are expected to return, to cropping after some time; countries should develop consistent definitional criteria and set-aside land allocation amongst categories.

Grazing Land Management

- Decision 16/CMP.1 defines Grazing Land Management (GM) as: “... *the system of practices on land used for livestock production aimed at manipulating the amount and type of vegetation and livestock produced.*”
- Lands under GM are predominantly used for production of herbaceous perennial vegetation (introduced or indigenous) for harvest by grazing, cutting, or both.
- It is *good practice* to:
 - to specify how land subject to GM is distinguished from other activities under the KP using the guidance in the *KP Supplement* and the *2006 IPCC Guidelines*.
 - to specify what types of lands are included under other activities under Article 3.3 and Article 3.4.

Grazing Land Management: Some considerations

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- For countries that included lands having trees or shrubs meeting forest threshold under GM in CP1, it is *good practice* to document consistency with the previous reporting and ensure there is no double-counting with FM in CP2.
 - Treed areas on grassland or being grazed established after 1990 meeting the definition of a forest can qualify as AR, and if they do, are included under those categories.
 - However, notwithstanding the threshold-based definition of forest, countries can continue to report by taking account of predominant land use to achieve consistency with reporting in CP1.

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- The criteria used to distinguish between CM and GM lands needs to be explicitly stated and applied consistently based on national definitions.
 - Areas that are only temporarily used for grazing, as part of a cropping rotation are normally included in CM. However, if CM is not elected, such land can be included under GM, applying consistent national criteria.
 - If a country reports all cropland and grassland used for livestock production under CM (or GM), then the Party does not need to differentiate between CM or GM activities.
 - If GM is elected with CM, it is *good practice* to include all cropland under CM and all grassland used for livestock production under GM.

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- If GM is elected with RV, the criteria used to distinguish between RV and GM lands needs to be explicitly stated and applied consistently based on national definitions.
 - It is *good practice* to include revegetated land used predominantly for production of livestock under GM.

Steps for estimating emissions and removals from CM/GM

STEP 1: Define CM/GM and apply the definition consistently over time, including in the base year

STEP 2: Identify CM/GM land using the Approaches described in Section 3.3, Chapter 3, Volume 4 of the *2006 IPCC Guidelines and KP Supplement*

STEP 3: Distinguish between the two subcategories of CM/GM: mineral soils and organic soils

STEP 4: Select the appropriate tier and methodology for estimating emissions and removals based on *key category analysis* including significant subcategories

STEP 5: Stratify by climate. For mineral soils, also stratify by other relevant biophysical characteristics of the land (e.g., soil type) and management practices

STEP 6: For each stratum, estimate the CM/GM emissions and removals for the base year and each year in the CP

Base Year

Base year

- Under Article 3.4 of the KP, emissions and removals resulting from CM/GM are estimated using a net-net accounting approach that requires estimation of GHG emissions and removals for the base year and each year of the commitment period
 - For most Parties with KP commitments (except for some countries with economies-in-transition), the base year is 1990.
- Total area under CM/GM for the base year and for each year of the commitment period needs to be determined.

CM/GM areas in base year and reporting period

Excludes land that was FL in base year but is CM/GM in reporting period but reported under FM as CEFC-hc land or is subject to D.

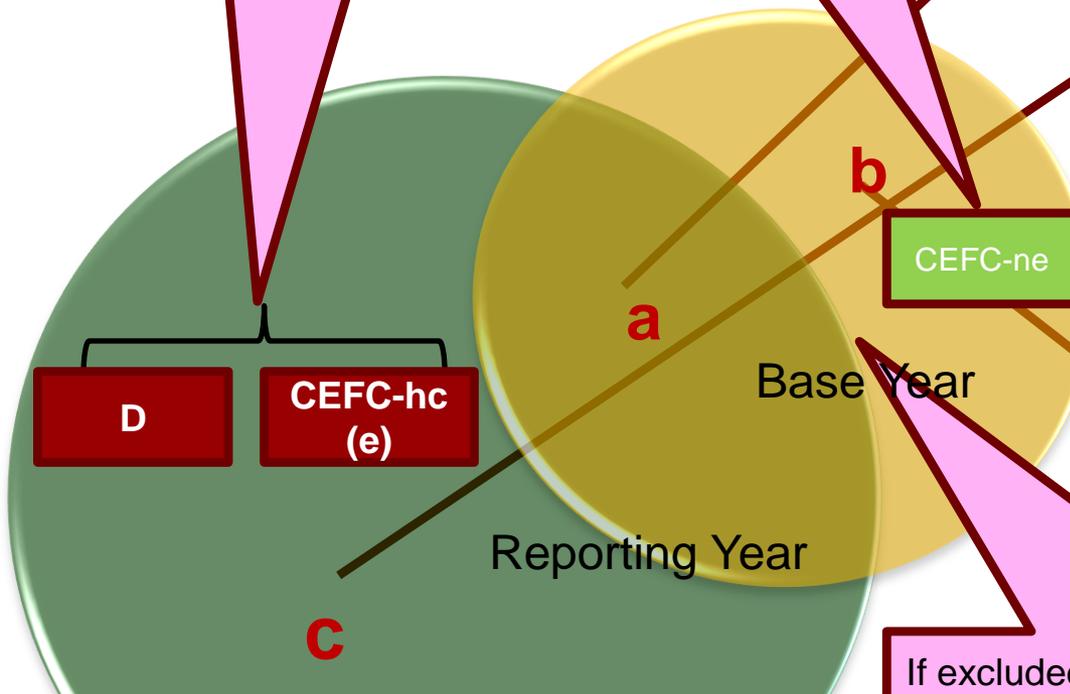
Includes land that was under CM/GM in base year but is reported under FM as CEF-ne land in the reporting period.

Area under CM/GM in base year and in reporting period

Area under CM/GM only in reporting year (e.g., SL, WL in the base year)

Area under CM/GM only in base year

If excluded area is not accounted under any other activity **emissions and removals will be accounted as zero in that year**. For transparency, it is *good practice* to describe the consequences of this exclusion on reported emissions and removals.



Base Year CM/GM Area = a+b

Reporting Year CM/GM Area = a+c-D-e

Choice of Methods for Identifying Lands Subject to CM/GM Activities

Identifying and tracking lands subject to CM/GM activities

- According to Decision 2/CMP.8, the geographical location of the boundaries of the area that encompass land subject to CM/GM needs to be reported annually, along with the total land areas subject to these activities.
- The geographical location of boundaries of lands subject to CM/GM may include a spatially-explicit specification of land subject to CM (Reporting Method 2) or instead just the boundaries of larger areas encompassing smaller lands subject to CM/GM along with estimates of the area subject to CM/GM in each of the larger areas (Reporting Method 1) obtained using sampling techniques.
- Lands subject to CM/GM and their management need to be tracked from 1990 to the end of CP or alternatively sampling techniques could be used.

Identifying and tracking lands subject to CM/GM activities (2)

- At the national level, it is *good practice*, when developing a sampling strategy, to identify criteria that could be used to set up a stratified sampling scheme. include relatively static biophysical characteristics (e.g., climate and soil type) as well as dynamic drivers such as management practices.
- Area derived from forest conversion since 1990 needs to be tracked separately as this would be reported under D activity.
- Emissions and removals from conversion of FM to CM/GM due to the harvest and conversion of forest plantations to non-forest land could be reported under CEFC provision.
- At higher tiers further subdivision may be necessary. Methods to identify CM/GM lands with necessary disaggregation in Annex I countries include national land use and management statistics and inventory data from a statistically based, plot-sampling system.

Stratification criteria

CM

- Biophysical criteria: climate and soil type, typical crop rotation systems etc.
- Degree of soil disturbance (e.g. tillage frequency and intensity)
- Level of input of crop biomass or organic amendment
- Crop rotation system
- Frequency of fallow practices
- Inclusion of woody biomass in the farming system (e.g. shelterbelts, orchards, other perennial plantations)
- Temporary use for livestock grazing

GM

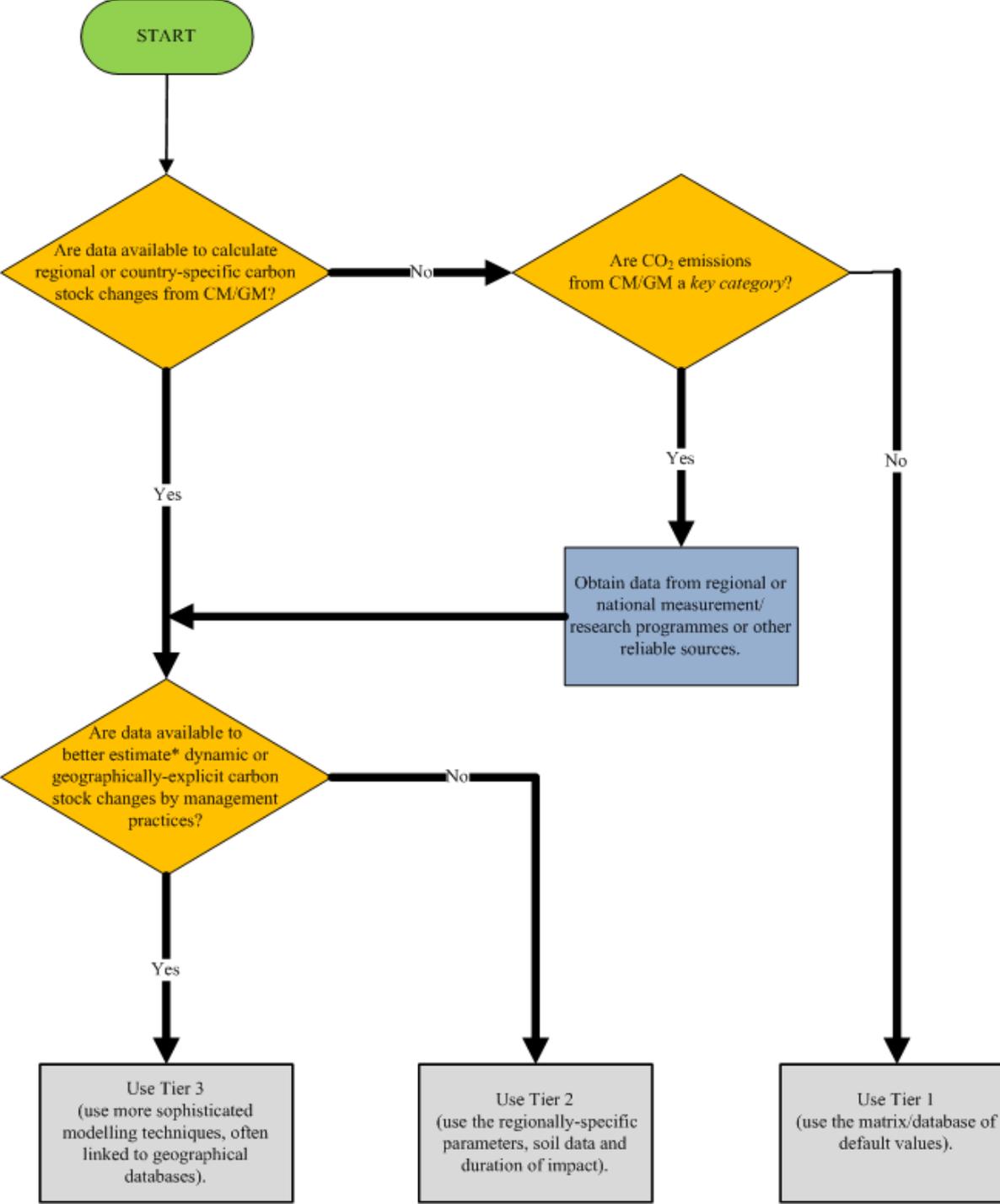
- Biophysical criteria: climate and soil type, typical crop rotation systems etc.
- Level of input of biomass or grassland productivity, manure, and other organic amendments
- Grazing intensity (stocking rate, frequency, seasonality)
- Prescribed fire
- Re-seeding
- Irrigation management
- Drainage
- Inclusions of woody biomass (e.g. shrubland, shelterbelts, other perennial plantations on grazed lands)

Choice of Methods for Estimating Carbon Stock Changes and Non-CO₂ GHG Emissions

Choice of methods for estimating carbon stock changes and non-CO₂ GHG emissions

- Methods for estimation of C stock changes in C pools and non-CO₂ emissions provided in *2006 IPCC Guidelines* (Chapters 2, 5 and 6, Volume 4) and the *Wetlands Supplement* (Chapters 2,3,4 & 5) need to be used for the base year and commitment period.
 - Only those CO₂ and non-CO₂ emissions from CM and GM that are not included in Agriculture sector.
- Choice of methods (Tier level) should be guided by the guidance in *2006 IPCC Guidelines* and the *KP Supplement* (Section 2.3.6: Choice of methods)
- If CM/GM is a *key category*, the inventory compiler should determine which subcategories (e.g., mineral soil, organic soil or above-ground biomass) are *significant* and focus efforts towards methodological improvements of these.

Decision tree for selecting the appropriate tier for estimating emissions and removals in the carbon pools under CM/GM for KP reporting



* a better estimate improves consistency, comparability, completeness, accuracy and transparency.

Choice of methods for estimating carbon stock changes and non-CO₂ GHG emissions (2)

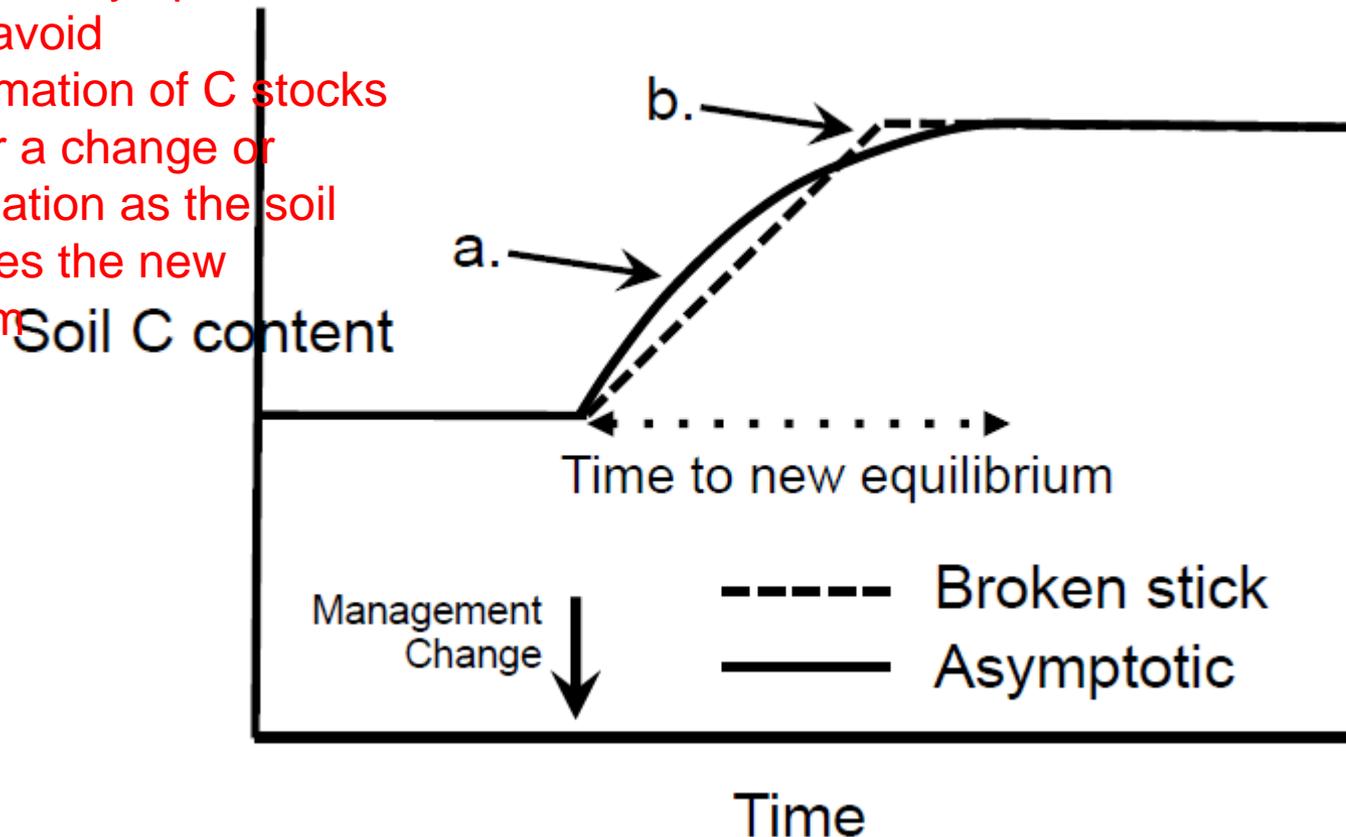
- Parties may use different tiers for individual pools/subcategories. It is *good practice* to use the same tier and methodology for estimating C stock changes and non-CO₂ emissions from each subcategory and pool for the full time series, for example, in the base year and during the commitment period.
- According to Decision 2/CMP.7, a Party may choose not to account for a particular pool in a commitment period if transparent and verifiable information is provided that demonstrates that the pool is not a source.
 - *KP Supplement* provides requirements for reporting excluded pools and documenting that a pool is not a source (Section 2.3.1: Pools to be reported).

Soil C: some key considerations for higher tier methods

- It is *good practice*:
 - to obtain region- or country-specific emissions factors from literature values, long-term experiments or the local application of well-calibrated, well-documented soil carbon models.
 - Region-specific data for soil carbon content (such as that available from national soil inventories) can also be used.
 - replace the 20-year default with a value that reflects national or regional information about the duration of practices to reach a new equilibrium in soil carbon stocks.
- At Tier 2, default factors associated with a land-use or management change can be replaced by more detailed relationships between the intensity of a practice (e.g. the amount of an organic amendment applied to the soil) and an annualized change in emissions or removals in the soil carbon pool.

Change in soil carbon stocks after a carbon-sequestering management change

Applying an asymptotic model
can help avoid
underestimation of C stocks
soon after a change or
overestimation as the soil
approaches the new
equilibrium



Summary

- Cropland Management (CM) is *the system of practices on land on which agricultural crops are grown and on land that is set-aside or temporarily not being used for crop production*. It includes annual and perennial cropland as well as set-asides.
- Grazing Land Management (GM) is *the system of practices on land used for livestock production aimed at manipulating the amount and type of vegetation and livestock produced*. It includes land predominantly used for production of herbaceous perennial vegetation (introduced or indigenous) for harvest by grazing, cutting, or both.
- The *KP Supplement* updates the supplementary methods provided in Chapter 4 of *GPG-LULUCF* on CM/GM in line with the provisions of Decisions 2/CMP.7 and other relevant decisions of the UNFCCC and the guidance in the *2006 IPCC Guidelines* including on: definitional issues and reporting requirements; base year; methods to identify and track lands; and methods to estimate emissions and removals.
- The supplementary guidance on CM/GM in the *KP Supplement* is substantively largely similar to that in the *GPG-LULUCF*.



Thank you!

Please visit TFI website for more information :

<http://www.ipcc-nggip.iges.or.jp/public/kpsg/index.html>

E-mail: srivastava@iges.or.jp