Expert Meeting on Use of Models and Measurements in GHG Inventories
9-11 August 2010, Sydney
Co-Chairs Summary

1. The expert meeting considered the use of models and measurements for all sectors in greenhouse gas emission inventories. In the light of experience to date, the meeting compiled a report on experience and the lessons learnt, particularly related to transparency so that inventory compilers addressing these issues can benefit from this experience.

2. Measured data underlie both models and facility level data. Measurements may be made at individual plant covering all of part of specific sub-sectors, and the meeting noted that there are an increasing number of reporting systems that combine such measured data with other facility level information. In general, models, use measured data for calibration, evaluation and validation to estimate those emissions or removals that cannot be easily otherwise obtained, and so extend limited information to cover national emissions and removals.

3. The use of both models and facility level data in inventories provides significant opportunities to improve the overall quality and, usually, accuracy of the inventory, through, amongst other things, (i) reducing uncertainty and improving uncertainty estimates in the national inventory; (ii) improving spatial and temporal resolution of data and further disaggregating data categories; or (iii) improving potential to correctly estimate impacts of mitigation on national inventories by, for example, reflecting any mitigation effects from measurements or by improving inventory stratification. Therefore their use in the national inventory should be encouraged.

4. The key issue identified in the use of both models and facility level data, is transparency. While approaches to ensuring transparency, documenting and reporting lower Tier approaches are clearly given in the IPCC Guidelines, the use of models and facility level data is only discussed more generally as the specifics depend on national circumstances. The 2006 IPCC Guidelines do provide the overall approach to transparently documenting and reporting these types of data. The meeting noted that clearer descriptions of the approaches used to derive national emissions would help ensure the results understandable and credible and that recent experience provides useful guidance to inventory compilers on how to do this.

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5. The meeting compiled lists of typical items that, when reported, may lead to improved transparency. These include:

Models	Facility Level Data
• Basis and type of model • Application and adaptation of the model • Main equations/processes • Key assumptions • Domain of application • How the model parameters were estimated • Description of key inputs and outputs • Details of calibration & model evaluation • Uncertainty and sensitivity analysis • QA/QC procedures adopted • References to peer-reviewed literature	Institutional arrangements • Legal basis • Elements covered • Criteria for data selection • QA/QC • Confidentiality Category-specific • Category emissions • Implied emission factor • Uncertainty • How completeness and time series consistency are ensured

6. The meeting also considered some of the factors inventory compilers need to consider in the use of models and facility level data.

7. For models considerations include: reasons for model selection; interpretation of model results; calibration and parameterisation; evaluation of model methods, processes and results; comparisons with lower tiers and measurements; uncertainty and sensitivity analysis.

8. For facility level data considerations include: do the facility level data definitions match those of the inventory and how has this matching been achieved; does the dataset completely cover a reporting category and if not how this gap has been filled; how has time series consistency between the facility level data and estimates for earlier years has been achieved; and how might these data enhance the quality of inventories

9. The meeting also considered how the use of these methods can be encouraged. The main barriers to the adoption of complex models are the need for enhanced financial resources and institutional capacity. Access to suitable models, and the ability to modify them, remains a barrier to their use. The participants also noted that the use of models requires a significant, sustained and dedicated effort over the lifetime of the model to collect and update high quality and reliable data at a suitable resolution and to maintain and adapt suitable models.

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