1.1. INTERNATIONAL ACTIVITIES ON NATIONAL GREENHOUSE GAS EMISSION INVENTORIES

Carolien Kroeze

Environmental Systems Analysis, Wageningen University

Introduction

The IPCC/OECD/IEA Programme for National Greenhouse Gas Inventories includes two activities that are relevant for the topic of this workshop: the development of the *IPCC Guidelines for National Greenhouse Gas Inventories* and, related to that, the development of *Good Practice Guidelines for Inventory Preparation.*

IPCC Guidelines for National Greenhouse Gas Inventories

The IPCC Guidelines for National Greenhouse Gas Inventories have been developed in order to assist countries in estimating their national emissions. The IPCC Guidelines consist of methods for the quantification of greenhouse gas emissions from energy, industry, solvent and other product use, agriculture, land use change and forestry and waste. For each of the relevant emissions an estimation method including default emission factors is given, that is applicable to any world country on the basis of readily available statistics on human activities. Countries are, however, not obliged to estimate their emissions following the default methods included in the IPCC Guidelines. Instead, they may report alternative estimates, based on country-specific information.

Nitrous oxide (N_2O) from agriculture as an example

The IPCC method for estimating N_2O emissions from agriculture was developed by an expert group in 1995, reviewed in 1996 and published in the revised IPCC Guidelines in 1997 (IPCC, 1997). The expert group consisted of more than 30 scientists from different countries. The group was subdivided into 3 subgroups, focussing on (1) emissions from agricultural fields, (2) emissions associated with animal production and (3) indirect emissions (e.g. from polluted surface waters). The subgroups developed draft calculation methods which were finalized at a meeting. The method is described in detail in Mosier et al. (1998). Countries can estimate their agricultural N_2O emissions following this method, on the basis of information that can be obtained from FAO databases. The method includes a nine-step procedure to estimate national emissions from this information. On a global scale, the method results in emission estimates that are consistent with trends in atmospheric N_2O (Kroeze et al., 1999). However, this does not necessarily indicate that the method provides good quality estimates on the national level. For several countries the IPCC method results in higher estimates than reported in their National Communications. This is partly a result of missing sources in the National Communications, and partly a result of different estimation methods used by countries, based on country-specific information.

Approaches to assess the quality of national emission inventories

National greenhouse gas inventories are preferably accurate, complete, comparable, transparent and of good quality. However, no clear guidance exists as yet on how to meet these requirements. November 1997, an IPCC Expert meeting was held focussing on the quality of greenhouse gas inventories (Van Amstel et al., 1999). At this meeting, four

different approaches to assess the quality of an inventory were discussed (Lim and Boileau, 1999):

- Inventory quality assurance
- Comparison of emission inventories
- Comparison of emission estimates with atmospheric model results
- Direct emission measurements

Good practice in inventory preparation

Currently, an activity within the IPCC/OECD/IEA Programme for National Greenhouse Gas Inventories focuses on the development of guidelines for good practice in inventory preparation. The objectives of this activity are

- To examine good practice in inventory preparation
- To outline procedures for establishing completeness, comparability, transparency and quality of inventories
- To develop guidance on specific methodological and reporting issues
- To examine issues related to uncertainty assessment

These issues are discussed at four IPCC Expert Meetings, focussing on industry, agriculture, energy and waste. In addition, a meeting will be held focusing on uncertainty assessment. One of these meetings was organized at the Wageningen University, and focused on greenhouse gas emissions from agriculture (IPCC Expert Meeting on Good Practice in Inventory Preparation: Agriculture, February 1999).
Some of the issues discussed at this meeting included

- Good practice decision trees
- Consistency of activity data
- Assessment of the nitrogen cycle in inventories
- Interrelations between estimates of methane, nitrous oxide, ammonia and nitrogen oxide emissions
- How to take into account temporal variation
- Guidance towards collection of country-specific information

Monitoring of emission reduction

The IPCC Guidelines were primarily developed to quantify present-day emissions, which does not necessarily mean that they can be used for the monitoring of all possible emission reduction strategies. There may be policy options, for which the methodologies included in the IPCC Guidelines may not be sufficiently detailed to assess their effects. It would be useful, therefore, to take this into account when evaluating the IPCC Guidelines in the future.

References

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