Nevertheless, evidence considered by the Paris meeting indicated that for a developed country the overall uncertainty in emissions weighted by global warming potentials (GWPs) in a single year could be of the order of 20%, mainly due to uncertainties in non-CO_2 gases.[3]

Analysis also indicated that the uncertainty in the trend in emissions may be less than the uncertainty in the absolute value of emissions in any year. This is because a method that over or underestimates emissions from a source category in one year may similarly over or underestimate emissions in subsequent years. The preliminary evidence available to the Paris meeting suggested that, when this compensation is taken into account, the uncertainty on the trend in emissions between years could fall to a few percent for industrialised countries.[4]

Chapter 6, Quantifying Uncertainties in Practice, of this report describes methods to determine the uncertainty in each source category. These methods use a combination of empirical data and expert judgement according to availability. They estimate the relative contribution that the source category makes to the overall uncertainty of national inventory estimates, in terms of the trend as well as absolute level. These methods are consistent with the conceptual guidance on uncertainties in Annex 1, Conceptual Basis for Uncertainty Analysis. They will enable countries to report on uncertainties in a consistent manner, and provide valuable input to national inventory research and development activities. The methods are capable of allowing for relationships in uncertainties between different inventory components, and are supplemented by an extensive set of default uncertainties developed through the sector workshops.

1.3 ROLE OF GOOD PRACTICE IN MANAGING UNCERTAINTIES

To be consistent with *good practice* as defined in this report, inventories should contain *neither over nor underestimates so far as can be judged*, and the uncertainties in these estimates should be *reduced as far as practicable*.

These requirements are to ensure that emissions estimates, even if uncertain, are bona fide estimates, in the sense of not containing any biases that could have been identified and eliminated, and that uncertainties have been minimised as far as practicable given national circumstances. Estimates of this type would presumably be the best attainable, given current scientific knowledge and available resources.

Good practice aims to deliver these requirements by providing guidance on:

- Choice of estimation method within the context of the *IPCC Guidelines*;
- Quality assurance and quality control procedures to provide cross-checks during inventory compilation;
- Data and information to be documented, archived and reported to facilitate review and assessment of emission estimates;
- Quantification of uncertainties at the source category level and for the inventory as a whole, so that the resources available for research can be directed toward reducing uncertainties over time, and the improvement can be tracked.

Chapters 2 to 5 set out *good practice guidance* on the choice of estimation method at the source category level by means of decision trees of the type illustrated in Figure 1.1, Example-Decision Tree for CH_4 Emissions from Solid Waste Disposal Sites. The decision trees formalise the choice of the estimation method most suited to national circumstances. The source category guidance linked to the decision trees also provides information on the choice of emission factors and activity data, and on the associated uncertainty ranges needed to support the uncertainty estimation procedures described in Chapter 6, Quantifying Uncertainties in Practice. The most appropriate choice of estimation method (or tier) will depend on national circumstances, including the availability of resources and can be determined according to the methods set out in Chapter 7, Methodological Choice and Recalculation.

Inventory development is a resource intensive enterprise which means firstly that inventory agencies may need to prioritise among source categories and estimation methods, and secondly that data quality may improve over time. Guidance applicable to all source categories is given in Chapter 7, regarding how to identify the *key source*

[3] Based on an analysis of the UK inventory presented to the Paris meeting (Eggleston *et al.*, 1998) and which is described in more detail in Chapter 6, Quantifying Uncertainties in Practice, Section 6.3.1, Comparison between Tiers and Choice of Method.

[4] See footnote 3