Für Mensch & Umwelt

Umwelt Bundesamt

IG3IS round table with the National Emission Compilers:
"Where are the uncertainties and how we can improve them?"

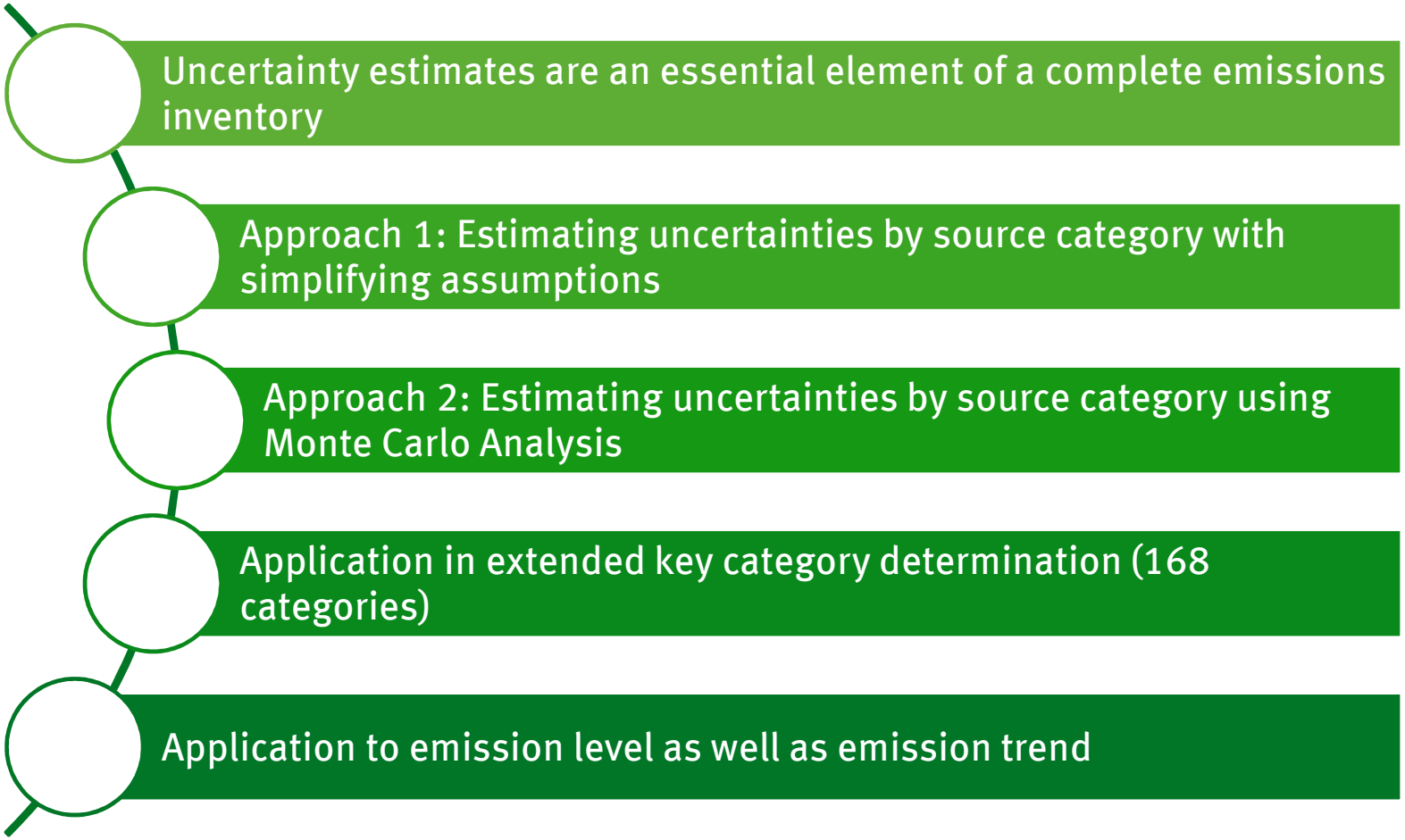
Uncertainty assessment in GHG inventories

Dirk Günther, Michael Strogies, Dr. Kevin Hausmann
German Environment Agency
Section I 2.6 - Emissions Situation

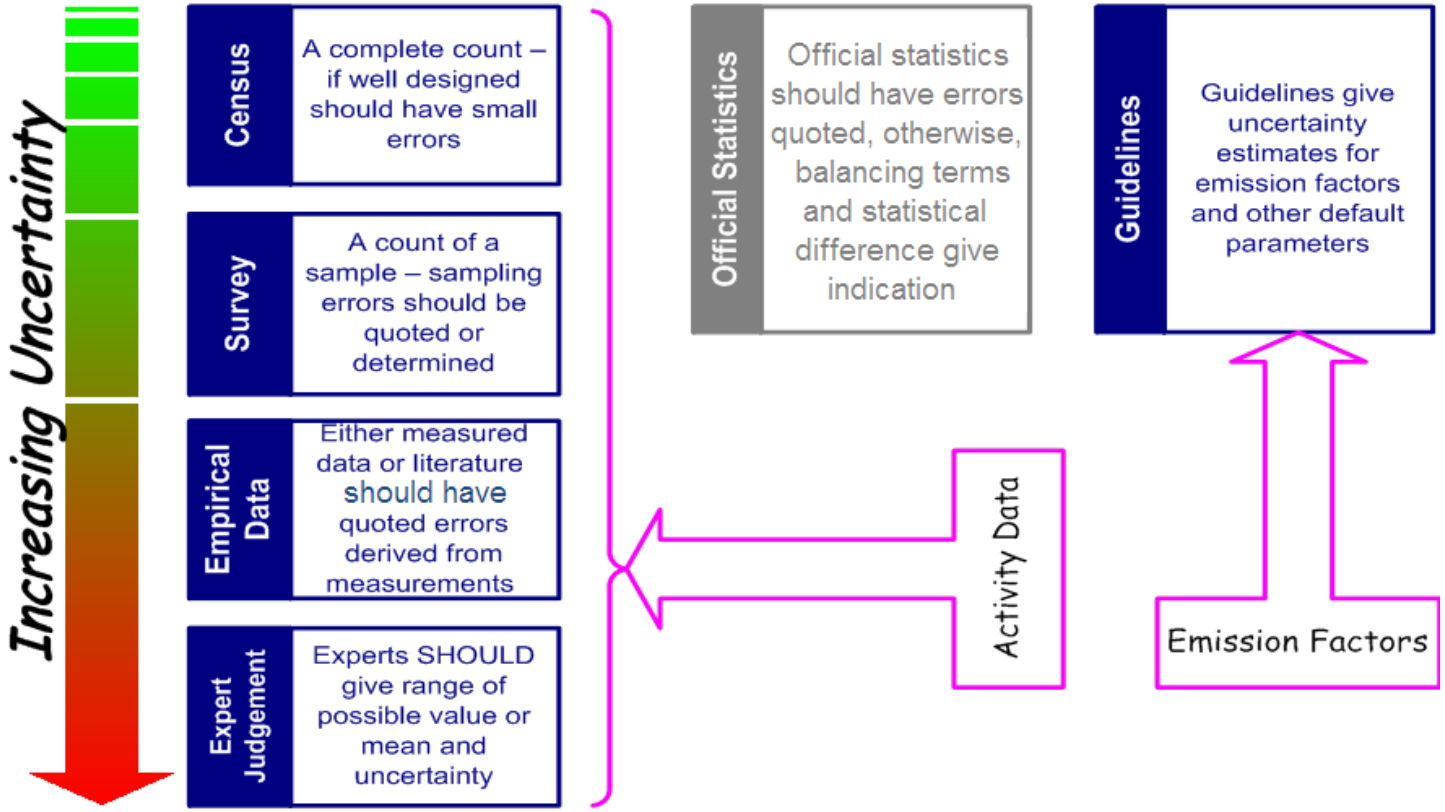
Motivation

Those who calculate need to know their error!

General aspects of the uncertainty assessment



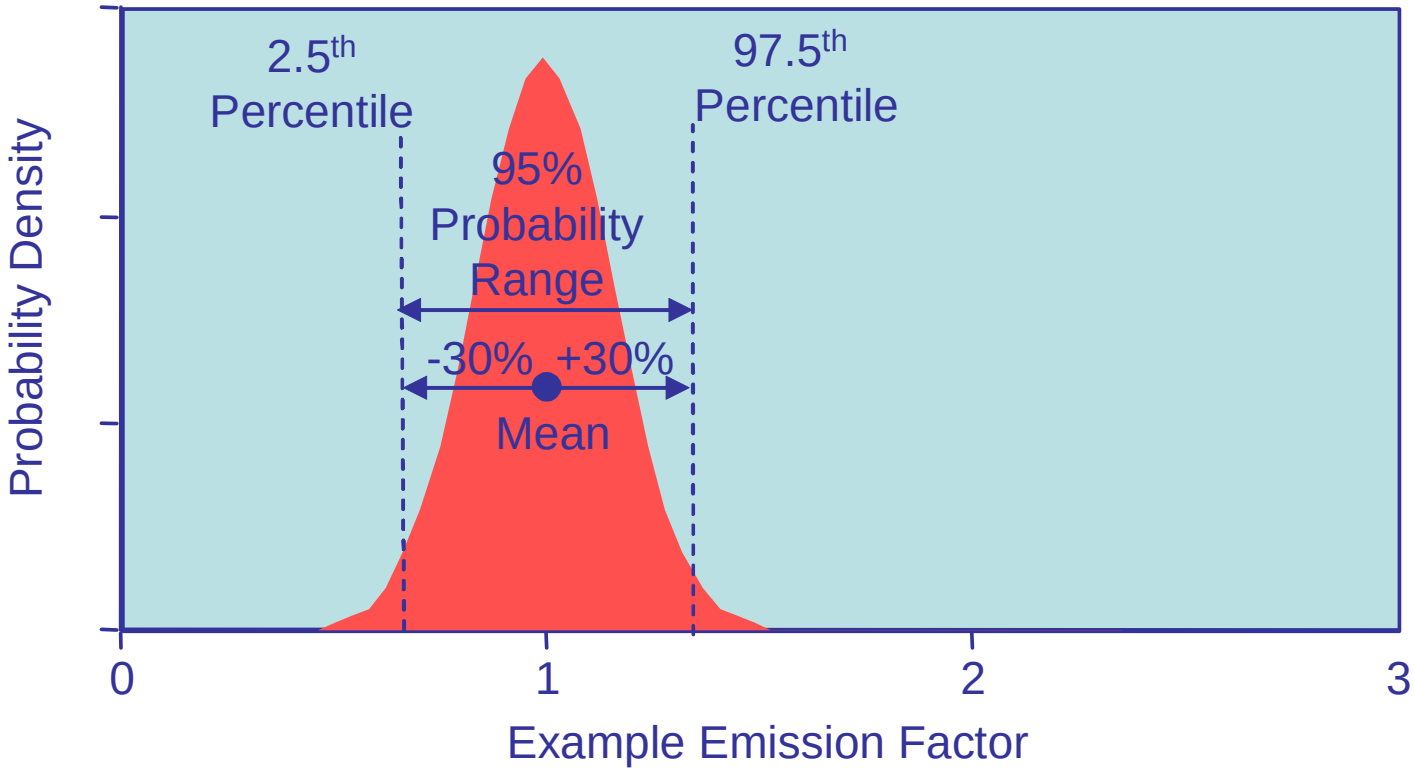
General aspects of the uncertainty assessment



Source: UNFCCC, CGE Training Material

General aspects of the uncertainty assessment

Uncertainty is quoted as the 2.5 and 97.5 percentile i.e. bounds around a 95% confidence interval.



Source: UNFCCC, CGE Training Material

Approach 1 Uncertainty calculation

EQUATION 3.1
COMBINING UNCERTAINTIES – APPROACH 1 – MULTIPLICATION

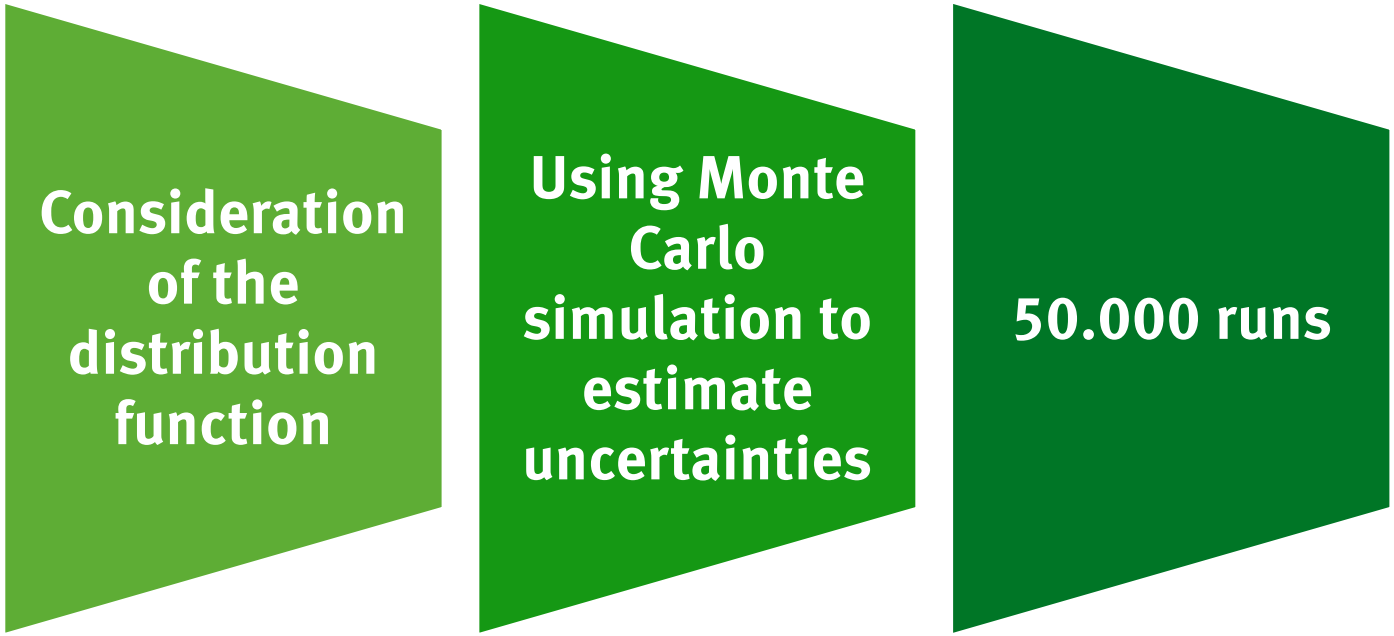
$$U_{total} = \sqrt{U_1^2 + U_2^2 + \ldots + U_n^2}$$

Using this interpretation, a simple equation (Equation 3.2) can be derived for the uncertainty of the sum, expressed in percentage terms:

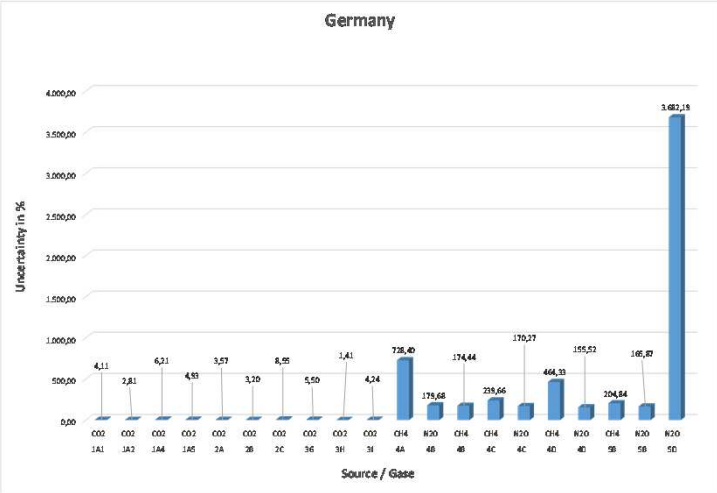
EQUATION 3.2
COMBINING UNCERTAINTIES – APPROACH 1 – ADDITION AND SUBTRACTION

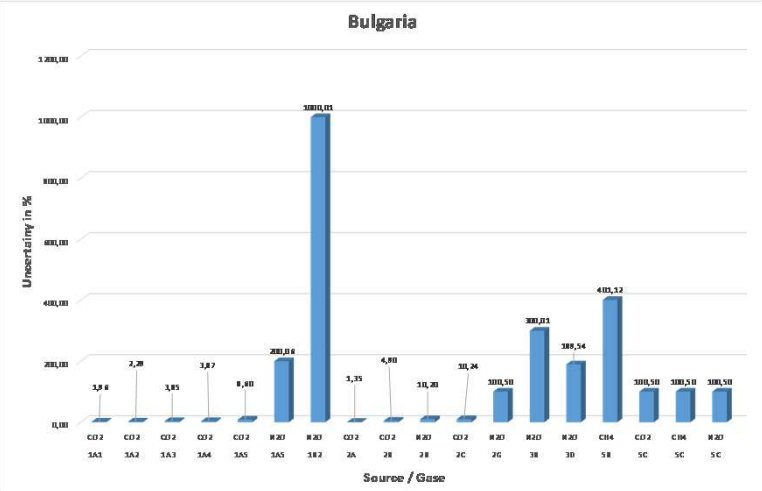
$$U_{total} = \frac{\sqrt{(U_1 \bullet x_1)^2 + (U_2 \bullet x_2)^2 + \ldots + (U_n \bullet x_n)^2}}{|x_1 + x_2 + \ldots + x_n|}$$

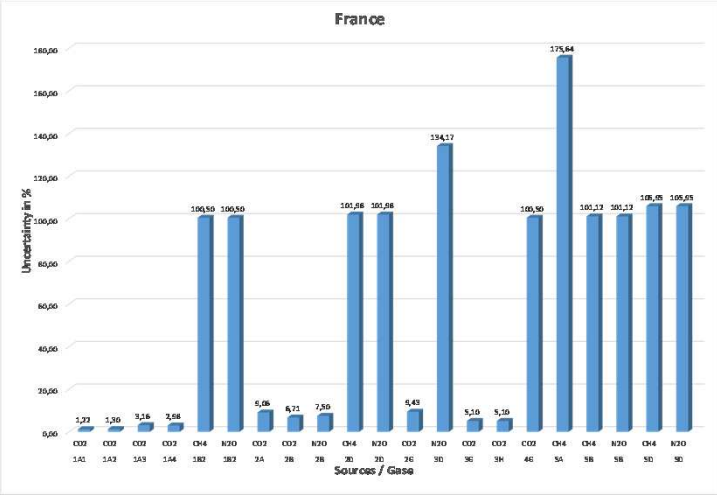
Approach 2 Uncertainty calculation

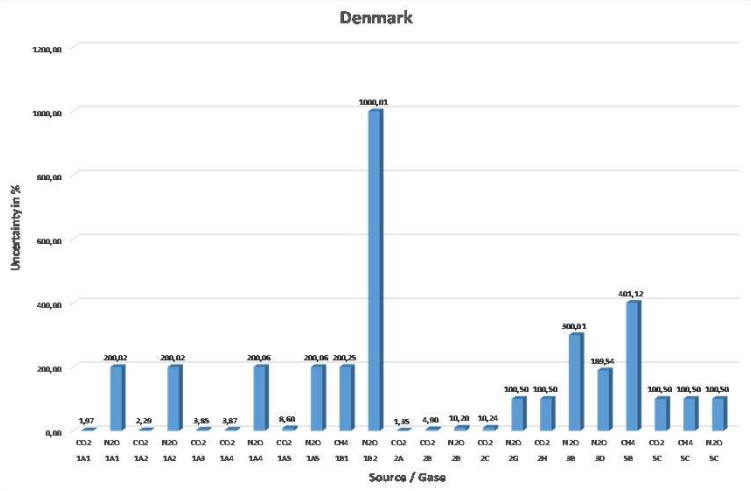


Uncertainties of Sources and Gases of EU Members States
Upper 10 and lower 10 values









Thank you very much for your attention

Dirk Günther
dirk.guenther@uba.de
Michael Strogies
michael.strogies@uba.de
Dr. Kevin Hausmann
kevin.hausmann@uba.de