

Quantitative Evaluation of Data Quality in Regional Material Flow Analysis

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Supporting information is linked to this article on the JIE website

Summary

A method for quantitative evaluation of data quality in regional material flow analysis (MFA) is presented. The principal idea is that data quality is a multidimensional problem that cannot be judged by individual characteristics such as the data source, given that data from official statistics may not be *per se* of good quality and expert estimations may not be *per se* of bad quality, respectively. It appears that MFA data are never totally accurate and may have certain defects that impair the quality of the data in more than one dimension. The concept of MFA information defects is introduced, and these information defects are mathematically formalized as functions of data characteristics. They are quantified on a scale from 0 (no information defect) to 1 (maximum information defect). The proposed method is illustrated in a case study on palladium flows in Austria. A quantitative evaluation of data quality provides opportunities for understanding and assessing MFA results, their *a priori* information basis, their reliability in decision making, and data uncertainties. It is a formal step toward better reproducibility and more transparency in MFA.

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