

A guidance for assessing and communicating uncertainties

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Abstract In the daily practice of science for policy, as experienced by governmental agencies which inform the policy and the public on the state and outlook of the environment, there is a pressing need for guidance in assessing and communicating uncertainties. This need extends beyond the quantitative assessment of uncertainties in model results, and focuses on the entire process of environmental assessment, running from problem framing towards reporting the results of the study. Using the Netherlands Environmental Assessment Agency (RIVM/MNP) as a case, the development, structure and content of such a guidance system is highlighted. Conditions for a successful implementation of the guidance system are discussed, and some prospects for future work are outlined.

Keywords Communication; guidance; interaction; science-policy; tool catalogue; uncertainty assessment

Introduction

At the onset of 1999, the Netherlands National Institute for Public Health and the Environment (RIVM) was faced with a credibility crisis due to public criticism in a Dutch quality newspaper by an employee of the RIVM. He criticized the institute for suggesting an unjustified level of certainty in reporting environmental studies, by not duly accounting for uncertainty and relying too much on the virtual reality of poorly validated models. His criticism attracted much media attention in the Netherlands and triggered extensive public and political debate on the credibility, reliability and quality of environmental statistics and model-based environmental foresight, as well as on the role and position of science in policy-making (van der Sluijs, 2002).

This event can be seen as typical for the role and position of science for policy and society in a world which is becoming increasingly interlinked and complex. Now decisions are urgent, stakes are high and diverse, values are in dispute, uncertainty and ignorance involved are high, and trust is fragile (Funtowicz and Ravetz, 1999). All these problems are common for sustainability, risk and safety issues. The changing relationship between science, policy and society calls for processes and arrangements where issues such as transparency and novel forms of quality control (e.g., extended peer review), public participation, multiple perspectives, reflexivity, transdisciplinarity and accountability are at the forefront in establishing knowledge that is more socially robust (Nowotny *et al.*, 2001).

At RIVM, the above-mentioned credibility crisis was the impetus for developing a system of guidance for assisting its employees in their daily practice of performing research to advise policy-makers and the public on the state and outlook of the environment, placing special focus on the assessment and communication of uncertainties. In this