

Different perspectives on handling uncertainties in nanotechnology: Lessons from the natural resource management area?

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With the current levels of complexity and risk that certain areas of science and technology have reached, in particular in nanoscience and biotechnology, the perspectives of the concept of uncertainty have gained new dimensions alongside with a requirement for a redefinition of the concepts, such as 'precaution' and 'collaborative decision making' that may suit better to this new situation, which requires an adaptive law approach, or an "ongoing normative assessment" as put by Dupuy and Grinbaum while pointing out the shortcomings of the precautionary principle.

These concerns are increasingly encountered in the public policy sphere as conflicts between community and interest groups proliferate, and the environmental, health, and social aspects of nanotechnology become more prominent. The realisation that there is a need to consider a wide variety of values, knowledge, and perspectives in a collaborative decision making process has led to a multitude of new methods and processes being proposed to govern the use and development of nanotechnology.

This paper aims to revisit collaborative decision making models, including participatory forms of uncertainty and risk assessment from the area of natural resource management and planning with a view to transpose them into the nanotechnology context. The focus will be on the following two questions: (i) what might be the benefits of using participatory approaches to uncertainty and risk assessment in the field of nanotechnology? and, (ii) how could exactly these approaches be incorporated in complex legal-institutional settings to realise these potential benefits?

The first section gives an overview of the collaborative decision making models with regard to uncertainty and risk assessment in the area of natural resource management and planning. The following part examines the proposed collaborative decision making models concerning uncertainty and risk assessment in the nanotechnology area. Part three will compare and discuss the models used in the two areas and suggest what approaches(s) can be more adaptive to handle the complexity of uncertainty and risk in the area of nanotechnology.

The paper is based on literature reviews of collaborative decision making models for uncertainty and risk assessment from natural resource management and planning and the Nanotechnology areas. These models are thereafter compared by assessing the benefits and downsides of different models in relation to handle complexity.

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