



Jul 11th, 10:50 AM - 11:10 AM

## Context scenarios: understanding societal context uncertainty in environmental modeling

Hannah Kosow

ZIRIUS, Research Center for Interdisciplinary Risk and Innovation Studies, University of Stuttgart,  
DIALOGIK, non-profit institute for communication and cooperation research, kosow@dialogik-expert.de

Sigrid Prehofer

ZIRIUS, Research Center for Interdisciplinary Risk and Innovation Studies, University of Stuttgart,  
sigrid.prehofer@zirius.uni-stuttgart.de

Wolfgang Weimer-Jehle

ZIRIUS, Research Center for Interdisciplinary Risk and Innovation Studies, University of Stuttgart,  
wolfgang.weimer-jehle@zirius.uni-stuttgart.de

Follow this and additional works at: <https://scholarsarchive.byu.edu/iemssconference>



Part of the [Civil Engineering Commons](#), [Data Storage Systems Commons](#), [Environmental Engineering Commons](#), [Hydraulic Engineering Commons](#), and the [Other Civil and Environmental Engineering Commons](#)

Kosow, Hannah; Prehofer, Sigrid; and Weimer-Jehle, Wolfgang, "Context scenarios: understanding societal context uncertainty in environmental modeling" (2016). *International Congress on Environmental Modelling and Software*. 29.

<https://scholarsarchive.byu.edu/iemssconference/2016/Stream-B/29>

This Event is brought to you for free and open access by the Civil and Environmental Engineering at BYU ScholarsArchive. It has been accepted for inclusion in International Congress on Environmental Modelling and Software by an authorized administrator of BYU ScholarsArchive. For more information, please contact [scholarsarchive@byu.edu](mailto:scholarsarchive@byu.edu), [ellen\\_amatangelo@byu.edu](mailto:ellen_amatangelo@byu.edu).

# Context scenarios: understanding societal context uncertainty in environmental modeling

**Hannah Kosow<sup>a,b</sup>, Sigrid Prehofer<sup>a</sup>, Wolfgang Weimer-Jehle<sup>a</sup>**

<sup>a</sup> ZIRIUS, Research Center for Interdisciplinary Risk and Innovation Studies, University of Stuttgart

<sup>b</sup> DIALOGIK, non-profit institute for communication and cooperation research

([kosow@dialogik-expert.de](mailto:kosow@dialogik-expert.de), [sigrid.prehofer@zirius.uni-stuttgart.de](mailto:sigrid.prehofer@zirius.uni-stuttgart.de), [wolfgang.weimer-jehle@zirius.uni-stuttgart.de](mailto:wolfgang.weimer-jehle@zirius.uni-stuttgart.de))

**Abstract:** We propose the context scenario approach to better deal with the uncertainty of future developments of socio-technical and socio-environmental systems. This approach goes beyond the established practice of environmental modeling. This practice consists in either using quantitative framework data on future societal developments (as e.g. GDP, population growth etc.) to drive model based environmental scenarios, or in combining intuitive storylines on societal futures with environmental simulation (SAS, Alcamo 2008). Instead, we use a qualitative but systematic form of systems analysis (cross-impact balance analysis CIB, Weimer-Jehle 2006) and combine it with modeling and simulation to construct integrated scenarios of socio-technical and socio-environmental systems. In our research, we combine two perspectives: First, we design and implement various case studies combining and integrating qualitative CIB with simulation models (e.g. in the projects [ENERGY TRANS](#), [Lima Water](#)). Second, we systematically reflect our work by using social sciences methods to evaluate and to learn from these experiences (e.g. in the projects [ACCESS](#), [ESS](#)). Our work shows that the qualitative but semi-formalized analysis of societal contexts through CIB is *one* useful approach to explore and understand the variety of possible future developments of society, as it allows to feature and to explain the multifaceted interplays between societal and technical and/or environmental transformations. Using context scenarios in environmental modeling and simulation improves the consistency and traceability of scenarios and fosters interdisciplinary knowledge integration. In sum, context scenarios allow to more adequately deal with the future uncertainty and complexity of coupled socio-environmental and socio-technical systems; and to provide richer, more consistent and more traceable scenarios based on environmental modeling for research, policy making and public debate.

**Keywords:** scenario uncertainty; context scenarios; cross-impact balance analysis CIB; socio-environmental systems