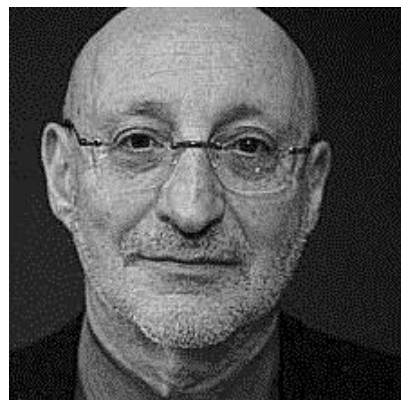


## ABOUT THE AUTHORS

**Alice Benessia** holds a Ph.D. in Science, Technology and Law, an M.A. in the Philosophical Foundations of Physics and an M.F.A in Photography and Related Media. She is a Research Fellow in the Epistemology of Sustainability at the Interdisciplinary Research Institute on Sustainability (IRIS) at the University of Torino. She has been an appointed expert at the Joint Research Centre of the European Commission. She is a founding member of the Italian Association for Sustainability Science. She also works as a visual artist and has taught and lectured on photography and visual arts in numerous participatory workshops. Her interdisciplinary research deals with epistemological issues arising in the framework of art, science and sustainability, with special interest in visual language.



**Silvio Funtowicz** taught mathematics, logic and research methodology in Buenos Aires, Argentina. During the 1980s he was a Research Fellow at the University of Leeds, England. Until his retirement in 2011 he was a scientific officer at the Institute for the Protection and Security of the Citizen (IPSC) of the Joint Research Centre of the



European Commission (EC-JRC). Since February 2012 he has been Professor II at the Centre for the Study of the Sciences and the Humanities (SVT) at the University of Bergen, Norway. He is the author of numerous books and papers in the field of environmental and technological risks and policy-related research. He has lectured extensively and is a member of the editorial board of several publications and the scientific committee of many projects and international conferences.

**Mario Giampietro** is ICREA (Catalan Institution for Research and Advanced Studies) Research Professor at the Institute of Environmental Science and Technology (ICTA) of the Autonomous University of Barcelona (UAB), Spain. He works on integrated assess-



ment of sustainability issues using new concepts developed in complex systems theory. He has developed an innovative scientific approach called Multi-Scale Integrated Analysis of Societal and Ecosystem Metabolism (MuSIASEM) integrating biophysical and socio-economic variables across multiple scales, thus establishing a link between the metabolism of socio-ecological systems and the potential constraints of the surrounding natural environment. Recent research has focused on the nexus between land use, food, energy and water in relation to sustainable development goals. He has authored or co-authored over two hundred publications, including six books, on research themes such as multi-criteria analysis of sustainability; integrated assessment of scenarios and technological changes; alternative energy technologies; energetics; urban metabolism; biocomplexity and sustainability; and science for governance.

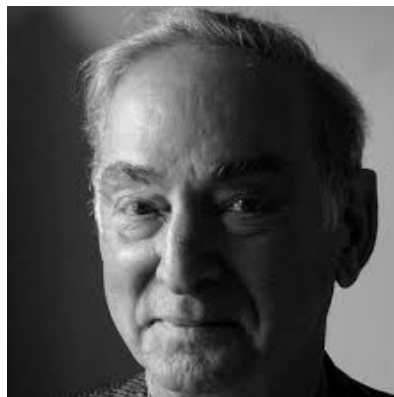
**Ângela Guimarães Pereira**

holds a Ph.D. in Environmental Systems and their Tensions. She began working at the Joint Research Centre of the European Commission in 1996 on European projects focussing on environmental and societal issues, future-oriented activities



and the integration of information technologies with public engagement. Her work has been inspired by the post-normal science framework developed by Silvio Funtowicz and Jerome Ravetz in the 1990s. At the JRC she currently works on knowledge assessment and the ethics of technoscience, critically investigating their governance and their correspondence with current innovation narratives. She has authored many peer-reviewed publications and was co-editor of *Interfaces between Science & Society* with Greenleaf in 2006, *Science for Policy: Challenges and Opportunities* with Oxford University Press in 2009 and *The End of the Cartesian Dream* with Routledge in 2015. Her current interests lie in the history of science and the emergence and reinvention of ways of knowing. Her favourite story is Hans Christian Andersen's "The Emperor's New Clothes".

**Jerome R. Ravetz** is a leading authority on the social and methodological problems of contemporary science. He was born in Philadelphia and attended Central High School and Swarthmore College. He came to England on a Fulbright scholarship, where he did a



Ph.D. in Pure Mathematics at Trinity College, Cambridge. He lectured in the History and Philosophy of Science at Leeds University. He is currently an Associate Fellow at

the Institute for Science, Innovation and Society at Oxford University. With Silvio Funtowicz he created the NUSAP notational system for assessing the uncertainty and quality of scientific information, in *Uncertainty and Quality in Science for Policy*, and also the concept of post-normal science, relevant when “facts are uncertain, values in dispute, stakes high and decisions urgent”. His earlier seminal work, *Scientific Knowledge and its Social Problems* (Oxford U.P., 1971 and Transaction, 1996), now has a shorter sequel, *The No-Nonsense Guide to Science* (New Internationalist, 2006). His other publications include a collection of essays, *The Merger of Knowledge with Power* (Mansell 1990). He is currently working on a ‘New Arithmetical Language for Policy’, based on ‘soft numbers’, employing sparse arithmetic and dynamical graphical methods.

**Andrea Saltelli** has worked in physical chemistry, environmental sciences, applied statistics, impact assessment and science for policy. His main disciplinary focus is on sensitivity analysis of model output, a discipline in which statistical tools are used to interpret the output of mathematical or computational models, and on sensitivity auditing, an extension of sensitivity analysis to the entire evidence-generating process in a policy context. A second focus is on the construction of composite indicators or indices. Until February 2015 he led the Econometric and Applied Statistics Unit of the European Commission at the Joint Research Centre in Ispra, Italy, developing econometric and statistical applications, mostly in support to the services of the European Commission, in fields such as lifelong learning, inequality, employment, competitiveness and innovation. He has been involved in training European Commission staff on impact



assessment. At present he is at the European Centre for Governance in Complexity (ECGC), a joint undertaking of the Centre for the Study of the Sciences and the Humanities (SVT) at the University of Bergen (UIB) and the Institute of Environmental Science and Technology (ICTA) at the Autonomous University of Barcelona (UAB). The ECGC is located in the UAB campus in Barcelona.

**Daniel Sarewitz** is Professor of Science and Society and co-director and co-founder of the Consortium for Science, Policy & Outcomes (CSPO) at Arizona State University. He is interested in the relationships among knowledge, technology, uncertainty, disagreement, policy



and social outcomes. His most recent book is *The Techno-Human Condition* (co-authored with Braden Allenby, MIT Press, 2011). He is the editor of the magazine *Issues in Science and Technology* ([www.issues.org](http://www.issues.org)), and also a regular columnist for *Nature*. From 1989-1993 he worked on R&D policy issues for the U.S. House of Representatives Committee on Science, Space, and Technology. Together with the writer Lee Gutkind, he is currently starting up a new project on science and religion.

**Roger Strand** originally trained as a natural scientist (with a Ph.D. in biochemistry, 1998), then developed research interests in the philosophy of science and issues of scientific uncertainty and complexity. This has gradually led his research into broader areas of social research



and philosophy, including questions of policy, decision-making and governance at the science-society interface.

Strand is currently Professor at the Centre for the Study of the Sciences and Humanities at the University of Bergen, Norway. He has coordinated two EU FP7 projects (TECHNOLIFE and EPINET) that addressed the need for more dynamic governance of science in society. He was a member of the National Research Ethics Committee for Science and Technology in Norway (2006-13) and Chair of the European Commission Expert Group on Indicators for Responsible Research and Innovation (RRI; 2014-15).

**Jeroen P. van der Sluijs** is Professor in the Theory of Science and Ethics of the Natural Sciences at the University of Bergen and Associate Professor in new and emerging risks at Utrecht University. His research focusses on scientific controversy around environ-



mental and health risks in situations where scientific assessment is used as a basis for policy making before conclusive scientific evidence is available on the causal relationships, the magnitude, and the probabilities of these risks. His work seeks to understand and improve the science-policy interface in a context of deep uncertainty by contributing and applying deliberative methods and tools for the assessment of the quality of knowledge. He has been working on contested science in the fields of climate change, pollinator decline, fish stock assessments, endocrine disruptors, electromagnetic fields, nanoparticles, underground storage of CO<sup>2</sup> and risk migration in sustainable technologies. Jeroen has published 78 articles in peer-reviewed scientific journals and 27 peer-reviewed book chapters.

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