

## CRAG - IRGC Symposium 2013

# UNCERTAINTY: FROM INSIGHT TO ACTION

**20 - 22 November 2013, Lausanne, Switzerland**

Risk is a matter of probability and severity, but there are uncertainties involved in the assessment of probability and severity. As a consequence, there are also uncertainties in the impact of risk. Describing and dealing with technical uncertainties must not be ignored and is an important element of risk analysis and governance, allowing better informed decisions. The symposium will address the treatment of uncertainty for public and corporate planning and decision making.

*Wednesday, 20 November*

Plenary session

*Understanding and managing uncertainty*

*Thursday, 21 November*

Parallel workshops

- Risk quantification
- Decision making under uncertainty: behavioural aspects
- The governance of energy transition

*Friday, 22 November*

Plenary session

*Governing and communicating uncertainty*

## AUDIENCE

- Academics and representatives of public and private sector organisations interested in sharing knowledge about risk and risk governance are invited to attend the plenary sessions on 20 and 22 November.
- Parallel workshops are organised on 21 November. Participants will engage in collaborative work for the improvement of analysis and effective strategies for dealing with uncertainty.

## VENUE

École Polytechnique Fédérale de Lausanne (EPFL)  
Lausanne, Switzerland

## MORE INFORMATION

Please visit [www.irgc.org](http://www.irgc.org) or <http://crag.epfl.ch>  
or contact the organisers at [conference@irgc.org](mailto:conference@irgc.org)

# PROGRAMME

## WEDNESDAY 20 NOVEMBER

### PLENARY SESSION

#### UNDERSTANDING AND MANAGING UNCERTAINTY

Room BC 420

11:00 Registration desk opens  
13:00-14:30 Opening session

#### WELCOME AND INTRODUCTION TO CRAG

**Philippe GILLET**, EPFL President a.i., IRGC Chairman

#### INTRODUCTION TO IRGC AND ITS HISTORY

**Charles KLEIBER**, IRGC Vice-chairman

#### RISK GOVERNANCE: OVERCOMING SILO THINKING AND APPROACHES

**Wolfgang KRÖGER**, ETHZ Risk Center

#### GOALS OF THE SYMPOSIUM

**Janet HERING**, CRAG, EAWAG, ETHZ, EPFL

#### AVALANCHE RISK IN RECREATIONAL ACTIVITIES: HOW PEOPLE DEAL WITH UNCERTAINTY

**Benjamin ZWEIFEL**, WSL

#### UNCERTAINTY: AN INTRODUCTION

**Granger MORGAN**, Carnegie Mellon University, IRGC

14:30-15:00 Coffee break

15:00-17:00 Talks

This session aims to provide an overview of the dimensions, components and implications of uncertainty that risk analysis and governance must account for and deal with.

#### RISK, WHOSE WORTH'S UNKNOWN, ALTHOUGH HIS HEIGHT BE TAKEN

**Ben ALE**, TU Delft

#### MAIN PRINCIPLES FOR DEVELOPING THE CONTENT OF RISK COMMUNICATION

**Wändi BRUINE DE BRUIN**, Leeds University, IRGC

#### FLEXIBILITY IN SYSTEMS PLANNING AND DESIGN

**Richard DE NEUFVILLE**, MIT

#### MODELS-AS-USUAL FOR UNUSUAL RISKS? ON THE VALUE OF CATASTROPHIC CLIMATE CHANGE

**Antoine BOMMIER**, ETHZ

17:00-19:00 Cocktail reception BC 4<sup>th</sup> floor

## THURSDAY 21 NOVEMBER

### PARALLEL WORKSHOPS

#### RISK QUANTIFICATION

Room BI A0 448

09:00 Registration desk opens

10:00-17:00 Workshop 1

Risk quantification is a key element of risk analysis and governance, and has its roots in statistics and stochastic modeling. Its purpose is to measure the likely sizes of risks and their physical and economic consequences, in order to underpin their management and insurance. The focus of this workshop is on the interplay between extreme value statistics, insurance, and risk management. It will address academics and practitioners from various domains, albeit with a particular emphasis on environmental, financial and insurance applications, in order to foster the interaction of researchers across and beyond EPFL with an interest in the methods and applications of risk quantification.

**Speakers:** **Hansjörg ALBRECHER** (University of Lausanne), **Paul EMBRECHTS** (ETHZ), **Claudia KLÜPPELBERG** (TU Munich), **Johanna NESLEHOVA** (McGill University), **Andreas SCHRAFT** (Swiss Re), **Jonathan TAWN** (Lancaster University)  
**Organised by:** **Anthony DAVISON** (EPFL), **Damir FILIPOVIC** (EPFL, Swiss Finance Institute)

#### DECISION MAKING UNDER UNCERTAINTY: BEHAVIOURAL ASPECTS

Room BC 420

12:00 Registration desk opens

13:30-17:15 Workshop 2

When facing risky decisions, individuals often make choices that deviate from those of a fully rational homo economicus. The "human touch" in decision making under risk is the theme of this workshop, with speakers from academia and practice exploring the effects of behavioral shortcomings on individual and group payoffs, as well as on the stability of systems such as financial markets. Central questions include how decision makers respond to incentives, and how behavioral insights can inform the design of systems that are resilient to both human (mis)behavior and randomness. Applications range from resource allocation and market mechanisms to operations and risk management.

**Speakers:** **Peter BOSSAERTS** (University of Utah), **Thomas EPPER** (ETHZ), **Boris GALONSKE** (Oliver Wyman), **Pierre LAUQUIN** (Nestlé), **Martin WEBER** (University of Mannheim)  
**Organised by:** **Rüdiger FAHLENBRACH** (EPFL), **Thomas WEBER** (EPFL)

# FRIDAY 22 NOVEMBER

## PLENARY SESSION

### THE GOVERNANCE OF ENERGY TRANSITION

Room BC 03

08:30 Registration desk opens

09:00-17:00 Workshop 3

Many countries, among which Switzerland and Germany, have announced ambitious plans to phase out nuclear energy and to substantially reduce their CO<sub>2</sub> emissions. Switching production to more renewable energy sources (in particular wind and solar) implies a profound energy transition, which is only achievable if the major stakeholders (governments, regulatory bodies, power producers, grid companies, industrial consumers, and citizens) play the game. This workshop will address the challenges and corresponding economic, social and political risks of such profound energy transitions for national policy makers and identify best practices and possible models for successful energy transition.

**Speakers:** **Ines AZEVEDO** (Carnegie Mellon University), **Rainer CARIUS** (Ministry for the Environment Baden-Württemberg), **Ilan CHABAY** (IASS), **Aline CLERC** (FRC), **Matthias GYSLER** (Swiss Federal Office of Energy), **Sophia BECKER** (ZIRIUS, University of Stuttgart), **Andreas RUDINGER** (IDDRI), **Wolfgang WEIMER-JEHLE** (University of Stuttgart)  
**Organised by:** **Daniel FAVRAT** (EPFL), **Matthias FINGER** (EPFL), **Ortwin RENN** (University of Stuttgart, IRGC)

17:00 Cocktail reception

The workshops will be followed by a common cocktail reception at "Le Hodler" in the Rolex Learning Center

### WI-FI ACCESS

Free wi-fi internet will be available on campus.

Network: public-epfl  
[choose Visitors/EN CLAIR in your browser]

Username: x-crag  
Password: gremau66

### CONTACT

**Marcel BÜRKLER**, Event & Project Manager IRGC  
marcel.burkler@irgc.org, +41 21 693 82 90  
During the conference: +41 76 499 96 41 (mobile)

### GOVERNING AND COMMUNICATING UNCERTAINTY

Room BC 420

08:00 Registration desk opens

09:00-11:00 Session 1

Following in-depth workshop discussions on Thursday, this session will enter into more details about how to deal with uncertainty and risk, in particular the specific challenges related to communicating and developing comprehensive governance approaches that account for how people perceive uncertainty.

**UNCERTAINTY IN THE PUBLIC PERCEPTION OF NEW TECHNOLOGIES: THE CASE OF ENERGY RESOURCES**  
**Vivianne VISSCHERS**, ETHZ

**HANDLING UNCERTAINTY: WHAT CAN DIFFERENT DISCIPLINES LEARN FROM EACH OTHER?**  
**David SPIEGELHALTER**, Cambridge University

**GOVERNING RISK-RISK TRADEOFFS**  
**Jonathan WIENER**, Duke University, IRGC

**INNOVATION AND ADAPTIVE GOVERNANCE IN BIOTECHNOLOGIES**  
**Kenneth OYE**, MIT, IRGC

11:00-11:30 Coffee break

11:30-12:30 Session 2

**COPING WITH UNCERTAINTY: THE NEED FOR INTEGRATING MANAGEMENT AND COMMUNICATION**  
**Ortwin RENN**, University of Stuttgart, IRGC

**CLOSING REMARKS**

 OLIVER WYMAN

**FCT**  
Fundação para a Ciência e a Tecnologia  
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

Swiss Re  


**EU-VRI**

# COMMITTEES

## STEERING COMMITTEE

**Philippe GILLET**, Provost and Vice-president of EPFL;  
Chairman of the IRGC Board of Foundation; Switzerland

**Janet HERING**, Scientific Director, CRAG; Director, EAWAG;  
Professor of Environmental Biogeochemistry, ETHZ;  
Professor of Environmental Chemistry, EPFL; Switzerland

**Granger MORGAN**, Professor and Head, Department of  
Engineering and Public Policy, Carnegie Mellon University;  
Chairman of the IRGC Scientific and Technical Council; USA

## SCIENTIFIC COMMITTEE

**V.S. ARUNACHALAM**, Founder and Chairman, Center for Study  
of Science, Technology and Policy; Member of the IRGC Scientific  
and Technical Council, India

**Wändi BRUINE DE BRUIN**, Professor of Behavioural Decision  
Making, Leeds University Business School; UK

**Damir FILIPOVIC**, Professor, Swissquote Chair in Quantitative  
Finance, EPFL; Swiss Finance Institute; Switzerland

**Manuel HEITOR**, Professor, Instituto Superior Técnico, Technical  
University of Lisbon; Member of the IRGC Scientific and Technical  
Council; Portugal

**Janet HERING**, Scientific Director, CRAG; Director, EAWAG;  
Professor of Environmental Biogeochemistry, ETHZ;  
Professor of Environmental Chemistry, EPFL; Switzerland

**Michael LEHNING**, Professor and Head, Laboratory of  
Cryospheric Sciences, EPFL; Head of Research Unit, Snow and  
Permafrost, Institute for Snow and Avalanche, Davos; Switzerland

**Granger MORGAN**, Professor and Head, Department of  
Engineering and Public Policy, Carnegie Mellon University;  
Chairman of the IRGC Scientific and Technical Council; USA

**Kenneth OYE**, Associate Professor of Political Science and  
Engineering Systems, Massachusetts Institute of Technology;  
Member of the IRGC Scientific and Technical Council; USA

**Andreas PAUTZ**, Professor, EPFL; Head, Laboratory for  
Reactor Physics and Systems Behavior, Paul Scherrer Institute;  
Switzerland

**Ortwin RENN**, Professor of Environmental Sociology,  
University of Stuttgart; Member of the IRGC Scientific  
and Technical Council; Germany

**Thomas WEBER**, Professor, Chair in Operations, Economics  
and Strategy, EPFL; Switzerland

**Jonathan B. WIENER**, William R. and Thomas L. Perkins  
Professor of Law, Duke University Law School; USA

**Lan XUE**, Professor and Dean, School of Public Policy and  
Management, Tsinghua University; Co-Chair of the IRGC

## ORGANISING COMMITTEE

**Marie-Valentine FLORIN**, Managing Director, IRGC;  
Executive Director, CRAG; Switzerland

**Janet HERING**, Chair, CRAG Scientific Committee;  
Director, EAWAG; Professor, ETHZ, EPFL; Switzerland

**Thomas WEBER**, Professor, Chair in Operations, Economics  
and Strategy, EPFL; Switzerland

# ABOUT

## EPFL CENTER ON RISK ANALYSIS AND GOVERNANCE (CRAG)

<http://crag.epfl.ch>

The mission of the CRAG is to develop and communicate know-  
ledge and expertise related to risk analysis (risk assessment, risk  
management, risk perception and risk communication) and risk  
governance, as the broad context in which risk-based decisions are  
made, in multi-disciplinary, cross-sectorial and multi-stakeholder  
approaches.

CRAG will primarily focus on systemic risks, defined as those that  
have an impact over several sectors or regions and cascading  
effects. Its main interest will be risks with physical consequences  
on the environment, human health and safety and infrastructure.  
However, their economic, financial, social or political, societal and  
cultural causes and consequences will also be addressed.

The Center is an interdisciplinary unit that will:

- Offer EPFL faculty the opportunity to share and develop their  
risk expertise in multi-disciplinary and international research and  
education activities.
- Develop research, teaching and outreach activities as related to  
risk analysis and risk governance by providing coordination and  
financial support.
- Link EPFL faculty with the network and policy activities of the  
International Risk Governance Council (IRGC).
- Host Visiting Professors in Risk Analysis and/or Risk Governance  
on a rotating basis.

## INTERNATIONAL RISK GOVERNANCE COUNCIL (IRGC)

[www.irgc.org](http://www.irgc.org)

- Based at EPFL in Lausanne, Switzerland, with network partners  
in Asia, North America and the European Union, IRGC is an  
independent foundation, a leader in identifying and exploring  
emerging systemic risks for which governance deficits exist, and  
in providing recommendations for how to correct them.
- IRGC works to improve the understanding and management of  
the risks and opportunities facing global society, providing insight  
on systemic issues that have an impact on human health, safety,  
the environment, the economy and society at large.
- Operating as a science-based think tank, IRGC influences  
decision-making in the public and private sectors by building  
bridges between the latest advances in scientific understanding  
and current policy issues.
- IRGC meets its objectives by facilitating international collaborative  
research projects, disseminating results through authoritative  
publications and organising conferences and roundtables focusing  
on specific risk issues and their governance

IRGC's network is extensive; it includes technical and policy  
experts in universities, government institutes and corporations  
from around the world. IRGC convenes these leaders on a regular  
basis to stimulate debate and advance the science and practice of  
risk governance.