

International Risk Governance Council

Annual Report 2015

Providing *evidence-based* and *policy-relevant* risk governance recommendations

International Risk Governance Council

↘ www.irgc.org



CONTENTS

Foreword	5
Acknowledgements	6
1 IRGC mission and core activities	7
2 Activities in 2015	8
Core concepts of risk governance	8
Cyber risk	10
Energy transitions	11
Nuclear power production	13
Precision medicine	13
3 Outreach and impact	15
4 IRGC organs and network	20



Your views are important to us. Please send your comments or questions to info@irgc.org or write to Marcel Bürkler, Communications Officer, EPFL IRGC, marcel.burkler@epfl.ch.

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FOREWORD

A foreword by the Chairman of the Foundation Board



“ The main task of IRGC is to educate the people who manage risks. But it is equally important to include the general public, as risk is also about perception ”

Dear Reader,

In 2015, IRGC successfully continued its work both on core concepts of risk governance and specific risk issues. IRGC released its landmark publication *Guidelines for Emerging Risk Governance*, which found an echo particularly also in the private sector. A publication on *Improving Risk Regulation* and the preparation of an international public conference at University College London completed its work programme in the concept area.

On specific issues, IRGC built upon its work on cyber risk with two expert workshops in Washington DC and Zurich. Precision medicine was also among its top priorities, with an expert workshop in Beijing. In close collaboration with the École Polytechnique Fédérale de Lausanne (EPFL) Energy Center, it organised an international public conference and expert workshop at EPFL on *Challenges and Opportunities for Demand Response*, resulting in a report on the same topic. The foundation thus further consolidated its collaboration with EPFL.

With rapidly increasing technological possibilities in many areas, managing and governing risk is crucial in order to reap the benefits of innovative technologies in an acceptable, reasonable and sustainable way. IRGC's mission of making sense of emerging technological opportunities and risks, and to provide neutral recommendation for their governance therefore remains highly relevant. In 2016, IRGC will continue to work on rapidly evolving and challenging governance issues relevant to society, namely in the fields of cyber security, autonomous cars and precision medicine.

I would like to take this opportunity to thank everyone who contributed to IRGC's success in 2015, in particular our sponsors, members of the foundation board and scientific & technical council, academic network partners, and secretariat staff.

I look forward to continuing IRGC's mission of advancing risk governance across all sectors and issues together with EPFL in the years to come.

P. Gillet

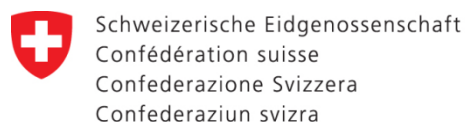
Prof. Philippe Gillet
Chairman of the IRGC Foundation Board,
Vice-President and Provost, EPFL

ACKNOWLEDGEMENTS

As a non-profit foundation, IRGC relies entirely upon funding from its network members and grant-making institutions, both private and public. In 2015, IRGC's main funders were:



IRGC also benefitted from in-kind and project-specific contributions from its Academic Network partners as well as other universities, institutions and organisations. In 2015, these included:



Swiss Federal Office of Energy SFOE



1 | IRGC MISSION AND CORE ACTIVITIES

The International Risk Governance Council (IRGC) is an independent non-profit foundation which aims to help improve the understanding and management of risks and opportunities by providing insight into systemic risks that have impacts on human health and safety, on the environment, on the economy and on society at large.

Established in 2003 at the initiative of the Swiss government, IRGC is based at École Polytechnique Fédérale (EPFL) in Lausanne, Switzerland, with network partners in Europe, the US and Asia.

The three facets of IRGC's work are:

Dialogue IRGC operates as a neutral, science-based think tank that fosters creative approaches and guidelines. It is well known for its non-partisan convening power that enables multi-stakeholder dialogue.

Science - Policy IRGC builds on the latest scientific knowledge to improve risk governance. It has developed conceptual methods and tools and provides science-based policy recommendations to key decision-makers in the public and private sector.

Outreach IRGC reaches out through its publications, website and events. It disseminates the results of its project work to leaders in various fields.

CORE ACTIVITIES

- Develop core risk governance concepts and instruments, including:
 - A framework for risk governance
 - A review of common deficits in risk governance
 - An analysis of contributing factors to risk emergence
 - Guidelines for emerging risk governance
- Provide guidelines for the governance of specific risk issues
- Convene multi-stakeholder events

KEY PRIORITIES

- Champion ignored, neglected and emerging issues
- Help organisations better anticipate and respond to risks
- Build bridges between science and policy to facilitate sustainable scientific and technological developments
- Foster the development of coherent risk governance cultures

2 | ACTIVITIES IN 2015

IRGC fulfils its mission and goals by organising multi-disciplinary and multi-sectoral **public conferences**, **expert workshops** and **roundtables**. IRGC also publishes peer-reviewed **reports**, **policy briefs** and **opinion pieces**, non-peer-reviewed **concept notes**, and produces risk governance recommendations. IRGC's activities in 2015 are described below.

All IRGC publications and conference reports are available for **download free of charge**.



➤ <http://www.irgc.org/publications/>
➤ <http://www.irgc.org/events/>

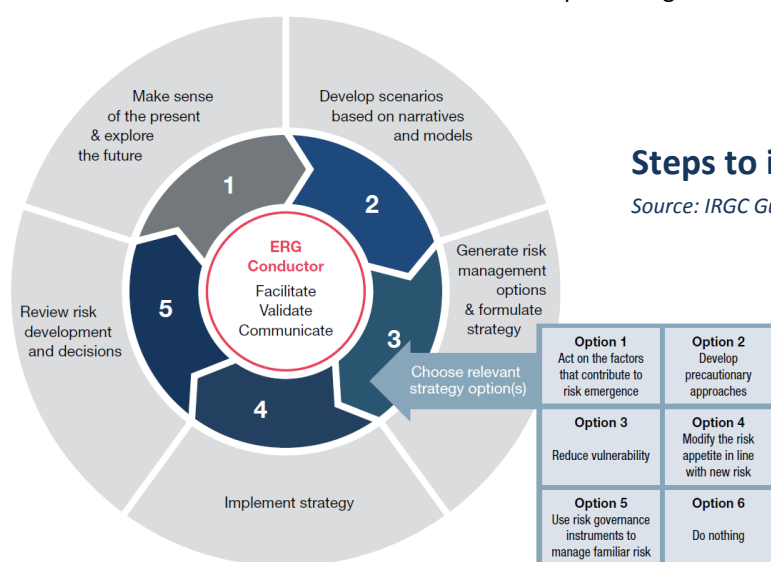
CORE CONCEPTS OF RISK GOVERNANCE

Report Guidelines for Emerging Risk Governance

This peer-reviewed report proposes a set of guidelines to help organisations deal proactively with emerging issues:

- Identify potential emerging risks and opportunities
- Evaluate and prioritise them
- Respond to emerging risks

IRGC's guidelines aim to combine strategic and managerial objectives, needs and constraints, with insights from scientists and scholars, who develop concepts and tools for improving decisions about the management of emerging risks and opportunities. The guidelines include suggestions to engage in horizon scanning and futures studies, to generate flexible and adaptable management options, to determine specific intervention points, to develop dynamic capabilities, to link with innovation management and to refine decision-making in situations of uncertainty. The report draws from consultations with academics and practitioners in the public and private sectors who have developed their own processes for emerging risk identification and assessment. The main report is accompanied by a separate Appendix, comprising further conceptual insights and recommendations.



Steps to identify and respond to emerging risks

Source: IRGC Guidelines for Emerging Risk Governance, IRGC 2015

**Edited Volume
Improving Risk
Regulation**

This publication seeks to stimulate reflection among public and private regulators as well as those who are regulated on how to improve the design and implementation of risk regulation. International experts with diverse backgrounds have contributed to this edited volume, which highlights some innovative approaches to improving the overall performance and efficiency of regulatory action:

- The contribution of transnational private regulation
- Examination of private sector, government and non-governmental organisation initiatives to manage system-level risks
- The potential scope and challenges of behaviourally informed regulation
- Managing uncertainty in drug development and use: enhancing adaptability and flexibility



**Planning Adaptive Risk Regulation
international public conference
London, 7 – 8 January 2016**

**International Public
Conference
Planning Adaptive
Risk Regulation**

How can regulation keep up with technological development? In a rapidly evolving environment, timely response of traditional regulatory approaches to the availability of new information cannot be guaranteed, which may pose a serious impediment to innovation. This calls for flexibility in designing regulation. Flexibility and revisions in regulation, however, may also create uncertainty for investors and operators. Hence, embedding flexibility in regulation is not enough, it must also be planned. Together with the Department of Science, Technology, Engineering and Public Policy at University College London (UCL STEaPP), IRGC organised a two-day conference convening participants from academia, regulatory agencies and industry to discuss experiences, challenges and ways to improve regulation related to new scientific developments and technologies. Speakers compared and contrasted past and current cases and potential for planned adaptive regulation in the fields of fuel economy standards, hydraulic fracturing, flood risk governance, autonomous vehicles, synthetic biology and precision medicine. The audience of included practitioners of risk governance and regulation from academia, the private and public sectors.

7 – 8 January 2016*
University College
London, London, UK

* This event was part of the
IRGC 2015 work programme



CYBER RISK

Expert Workshop

Comparing Methods for Terrorism and Cyber Security Risk Analysis

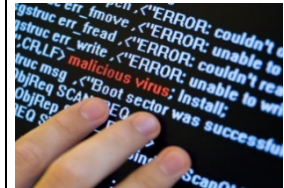
Gathering a group of leading researchers working on issues of terrorism risk assessment and a group of leading researchers in cyber security, the objective was to explore what the two communities can learn from each other and whether there are opportunities to avoid duplication and reinvention. The workshop discussed techniques for compartmentalising systems and isolating critical elements. It also emphasised that the field of adversarial risk analysis offers opportunities for improving the management of cyber risk by analysing the attacker-offender game, considering risks imposed by intelligent adaptive adversaries.

This event was organised and chaired by Prof. Granger Morgan, Carnegie Mellon University. Financial support for the workshop was provided by IRGC's sponsors, EPFL and Swiss Re. In-kind staff support was provided by the Department of Engineering and Public Policy at Carnegie Mellon University.

28 – 29 May 2015

AAAS

Washington DC, USA



Expert workshop on Cyber Security Risk Governance Zurich, 29 – 30 October 2015



Expert Workshop

Cyber Security Risk Governance

The workshop brought together chief risk officers and information security officers from industry with experts from academia in information security, computer network design and risk analysis. Participants discussed how to analyse the evolving threat landscape, anticipate threat detection, respond to threats, deal with the remaining risk, and address other governance issues. They emphasised the need and ways to improve cyber risk quantification, and highlighted that progress currently made in this area enables a more accurate transfer of the residual risk to insurance. Participants also identified areas where academia and industry can work collaboratively to develop both short term solutions and long-term multi-disciplinary research. The workshop was organised with main partner Marsh & McLennan Companies / Oliver Wyman and with support from Swiss Re, AXA Technology Services and EPFL. The MMC Global Risk Center produced a paper with key take-aways from the workshop (Evolving Challenges in Cyber Risk Management).

29 – 30 October 2015

Swiss Re Centre for
Global Dialogue
Zurich, Switzerland



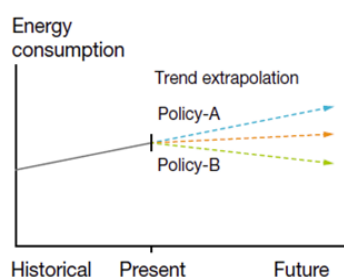
ENERGY TRANSITIONS

Concept Note Assessment of Future Energy Demand: A methodological review providing guidance to developers and users of energy models and scenarios

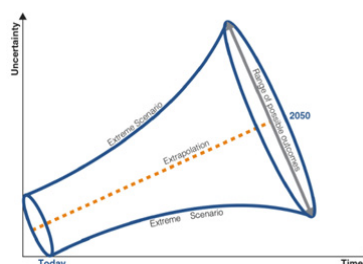
IRGC's objective with this concept note is to draw attention to mainstream energy scenario and modelling approaches and to stimulate thinking as to how these approaches can be used and improved for a better assessment of energy demand, which is a requirement for successful energy transitions. The paper reviews and discusses various types of scenarios (s. figure below), their main features and objectives, and provides guidance on possible outcomes. It is written for an audience of energy modellers who develop models and scenarios, and decision-makers who commission or use them. IRGC also draws attention to the ways scenarios are being developed and used (and abused), and describes in broad brushstrokes different approaches for improving the usefulness of models and scenarios, in particular using insights from behavioural sciences, and for making robust decisions in the face of deep uncertainties.



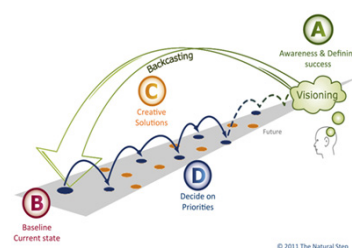
Forecast-based scenarios



Exploratory scenarios



Normative scenarios



Concerns	What will happen?	What can happen?	How to reach a certain goal?
Timeframe	Often short	Often long	Typically very long-term oriented
Methods	<ul style="list-style-type: none"> Intuitive/expert qualitative forecasts Simple trend extrapolation Complex multivariate econometric forecasting based on best-fit criterion What-if forecasts: dynamic causal forecasting 	<ul style="list-style-type: none"> Participatory and expert scenario-making Qualitative scenarios combined with appropriate energy model Robust decision-making approach recommended for making strategic plans 	<ul style="list-style-type: none"> Starting point: visions of desired future goals, needs, desires, etc. Backcasting combined with either exploratory or forecast-based scenarios Strategic plans developed for different temporal milestones
Example	EIA World Energy Outlook	World Energy Council Energy Scenarios	Greenpeace Energy Revolution Scenarios

Broad scenario categories and development approaches

Source: Assessment of Future Energy Demand, IRGC 2015

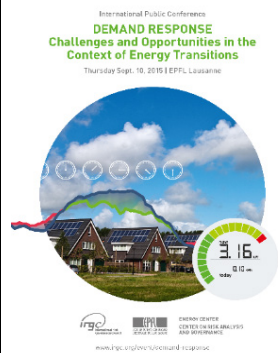
International Public
Conference and
Expert Workshop

**Demand
Response:
Challenges and
Opportunities in
the Context of
Energy Transitions**

IRGC and the EPFL Energy Center jointly organised an international public conference and an expert workshop on the challenges and opportunities for demand response in the context of energy transitions. Energy transitions towards decarbonised energy systems with increasing share of intermittent renewable energy requires that demand follows electricity generation rather than the other way round. This form of power system flexibility can be achieved through demand response, which involves temporary changes in electricity consumption typically in response to price signals or other financial incentives, or in reaction to grid conditions. Featuring speakers from industry, the public sector as well as academia, the conference and workshop sought to provide a comprehensive and multi-disciplinary overview of the opportunities and risks associated with demand response:

- The actual and potential contribution of different types of demand response to power system flexibility, security of supply, and to facilitating energy transitions
- Key enablers and barriers for achieving demand response potential, including regulatory and market developments, technological and business innovations, and consumer behaviour
- International practices for measurement and verification, and demand response integration in market and network operations

10 – 11 October 2015
École Polytechnique
Fédérale (EPFL)
Lausanne, Switzerland



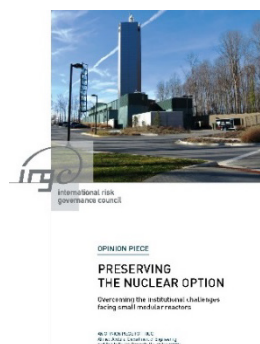
**Demand Response international public
conference, Lausanne, 10 September 2015**

NUCLEAR POWER PRODUCTION

Opinion Piece Preserving the Nuclear Option: Overcoming the Institutional Challenges Facing Small Modular Reactors (SMRs)

Concerned about the challenge faced by the world to decarbonise its energy systems and to get access to sufficient, reliable, affordable and sustainable electricity to meet the needs of growing populations and economies, IRGC published an opinion piece about the barriers to the development of small modular reactors. The paper, written by Dr Ahmed Abdulla* (Carnegie Mellon University) focuses on the institutional challenges posed by SMRs. While SMRs have the potential to improve performance in nuclear power generation by enhancing their performance across several areas, including safety of reactor operations, waste management, proliferation, and high economic cost, major obstacles remain. The paper argues that SMR development would benefit from more research on the following issues: Comparative risk assessment of alternative SMR deployment options and technologies, bilateral and multilateral agreements on enhanced nuclear safety and security, definition of the minimum emergency infrastructure that is needed for safe and secure operation of SMR plants, and a global liability regime.

* The views and policy prescriptions contained in this paper are those of the author, and are not a consensus judgment by IRGC, its reviewers, or sponsors

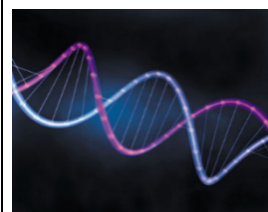


PRECISION MEDICINE

Expert Workshop Collection and Use of Human Genetic Information for Precision Medicine

An exploratory workshop was jointly organised by the School of Public Policy and Management at Tsinghua University, the Program on Emerging Technologies at the Massachusetts Institute of Technology (MIT), EPFL and IRGC. It was attended by experts from Europe, the US, China, India and Singapore. The workshop reviewed opportunities, risk and governance issues associated with the development of medical applications of genetic research. The workshop emphasised that in the absence of a clear governance regime, there is a risk of freeriding. Central themes in the discussion included issues of data ownership, collection and use. Participants emphasised the need to establish and develop trust between industry, regulators, public authorities and patients, including for the purpose of sharing relevant and accurate data. Because the field is evolving rapidly, innovation and risk management must be balanced. One recommendation from the workshop of how to approach this issue is adaptive governance. Getting regulators comfortable with an adaptive framework with built-in reviews and willingness to change course enables to reconcile innovation and risk management.

28 – 29 August 2015
Tsinghua University
Beijing, China



Collection and Use of Human Genetic Information for Precision Medicine Beijing, 28-29 August 2015



EXTERNAL EVENTS WITH IRGC CONTRIBUTION IN 2015

- | | |
|--|---|
| <p>June
SRA Europe
Maastricht,
Netherlands</p> | <p>Conference session Risk Governance - From Theory to Practice, 24th annual meeting of the Society for Risk Analysis Europe, Maastricht. IRGC gave a presentation on risk governance for dealing with the challenge of evidence-based decision-making in situations of uncertainty and emergency. IRGC stressed that risk governance can build ground for legitimate action in situations of crisis, and that concepts and instruments for risk governance can be used as intermediary between science and policy.</p> |
| <p>July
SRA World
Singapore</p> | <p>IRGC presented the role of resilience in IRGC concepts and recommendations at the Society for Risk Analysis World Congress in Singapore. Resilience building is one of various risk management strategies that risk managers are advised to consider in order to reduce vulnerability. It is a protective strategy to build in defences against the impact of an unknown or highly uncertain risk.</p> |
| <p>October
WBCSD
Geneva, Switzerland</p> | <p>Symposium on Measuring Sustainability Performance - Bridging Corporate and Academic Contributions, World Business Council for Sustainable Development (WBCSD), Geneva. IRGC presented a paper on risk governance for sustainability and innovation management. IRGC suggested that the field of risk governance provides insights and instruments that can be useful for sustainability and innovation management.</p> |
| <p>December
Aspen Global
Change Institute
Aspen, CO, USA</p> | <p>Workshop on Risk and Resilience in the Face of Global Change, Aspen Global Change Institute. IRGC presented on the resilience in IRGC concepts and recommendations – Articulating risk and resilience management from the perspective of a risk manager. In the case of complex socio-ecological systems, resilience building is a proactive strategy for adaptive risk management.</p> |
| <p>December
OECD High Level
Risk Forum
Washington, DC, USA</p> | <p>Session on Identifying Good Practices in the Governance of Risks - Raising Awareness to Risks Effectively and Improving Risk Communication, 5th OECD High Level Risk Forum, Washington, DC. IRGC gave a presentation on risk communication as a central element of risk management. It highlighted, among other things, the importance of taking into account the acceptability of risk and of testing the risk communication before it is made public.</p> |

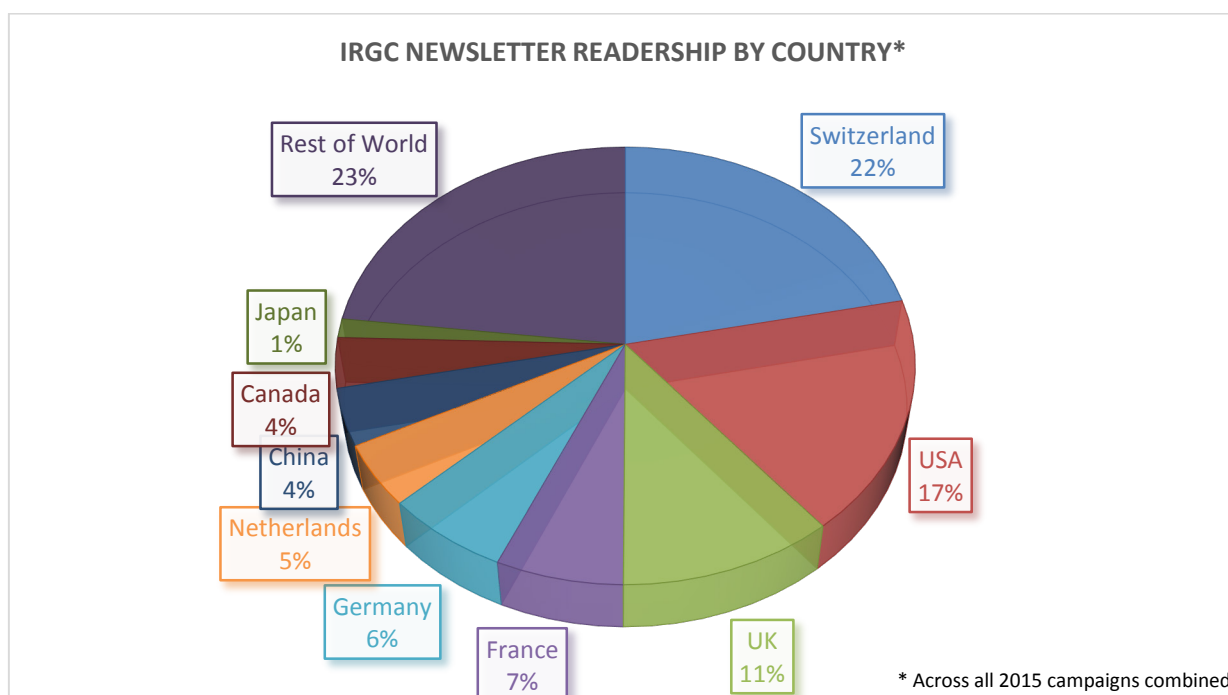
3 | OUTREACH AND IMPACT

IRGC's main outreach channels are its website and a regular email newsletter sent by the IRGC Secretariat. Moreover, IRGC promotes its publication with hard copies at events and mailings to key stakeholders.

NEWSLETTER

The newsletter, delivered on a monthly basis to a global audience, covers IRGC publications, event announcements as well as reports and outcomes from past conferences and workshops.

3,210 | Total number of individuals subscribed



Would you like to stay up to date on IRGC publications and events?
Sign up for the **IRGC newsletter**



➤ <http://www.irgc.org/newsletter/>

WEBSITE

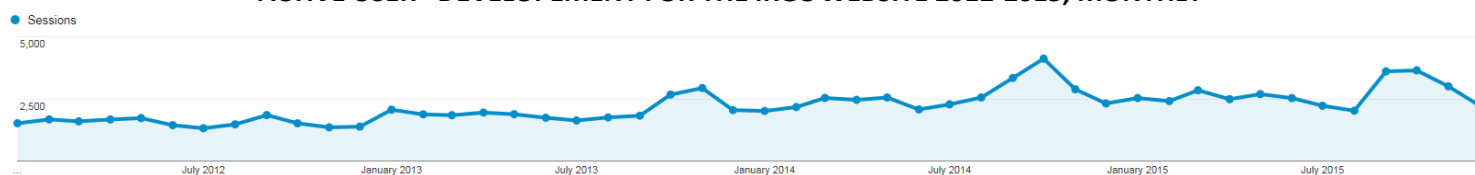
The IRGC website is the main point of information about IRGC and its work. It features information about IRGC projects, publications and events. The IRGC website offers free download of all IRGC publications, including white papers, reports, concept notes, opinion pieces, policy briefs and workshop/conference summaries.

As of 2015, a registration system for downloads has been put in place. While download remains free without any restrictions, individuals must provide an email address and are asked to indicate their name and organisation.

24,458 | Total number of users on the IRGC website in 2015*

Visits to the IRGC website (all pages combined) have increased slightly since 2012, with peaks in the run up to international conferences (Lausanne September 2013, Paris October 2014, and Lausanne September 2015):

ACTIVE USER* DEVELOPEMENT FOR THE IRGC WEBSITE 2012-2015, MONTHLY

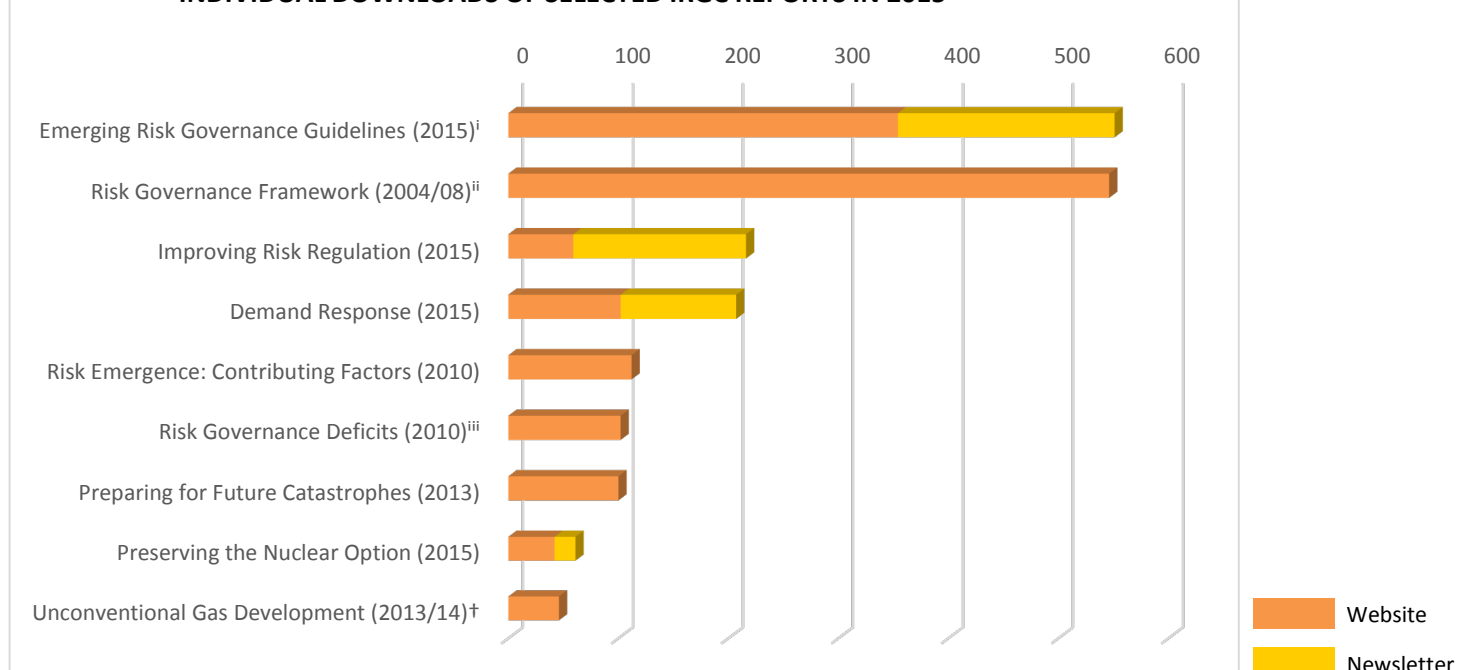


* Users that had at least one session, that is, an active interaction with the website. Includes both new and returning users. Source: Google Analytics

DOWNLOAD OF PUBLICATIONS

With the data gathered through the newly deployed download registration tool, IRGC is able to analyse who downloaded which reports. In 2015, the two most downloaded publications were the White Paper and Introduction to the **IRGC Risk Governance Framework** and the **Guidelines for Emerging Risk Governance**, including its Appendix.

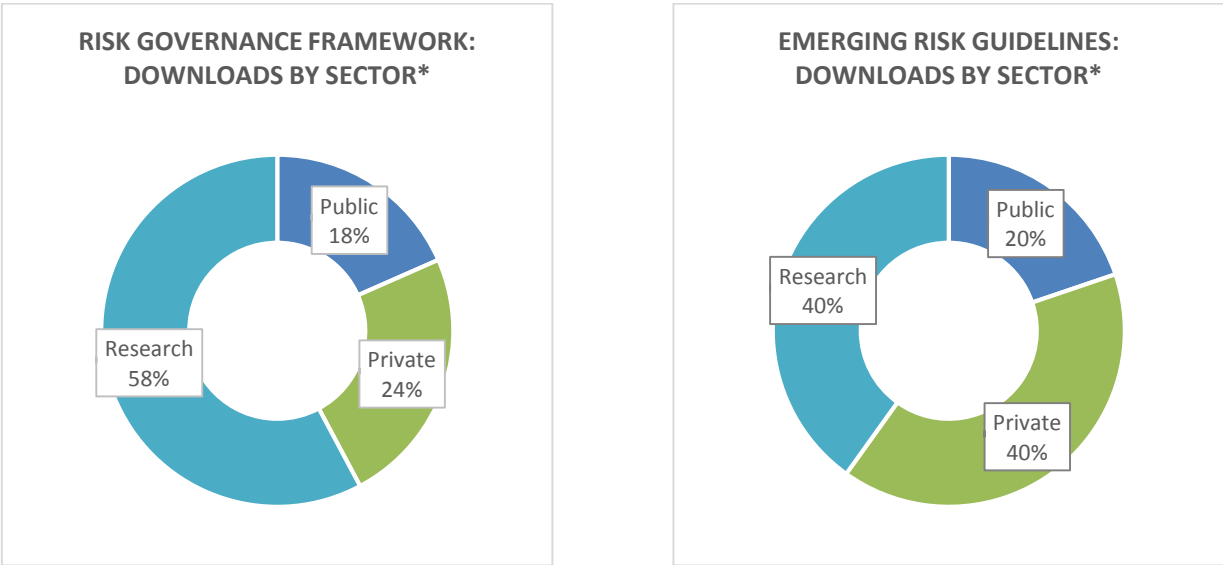
INDIVIDUAL DOWNLOADS OF SELECTED IRGC REPORTS IN 2015*



* Counts only one download per person per report; ⁱ Includes the report and appendix; ⁱⁱ Includes the white paper and introduction;

ⁱⁱⁱ Includes the concept note, report, and policy brief; [†] Includes the report and policy brief. Sources: IRGC download manager, MailChimp

Publication download data can also be analysed by sector:



ACADEMIC REFERENCES

IRGC concepts and publications continue to be widely cited in academic and business literature. For academic papers, reports and books published in 2015, there were:

220

Academic references to IRGC publications in 2015

Source: Google Scholar

While the vast majority of citations refer to IRGC reports on concepts of risk governance, primarily the Risk Governance Framework and the report on Risk Governance Deficits, publications on specific issues are also cited several times. Among those, the most widely cited is IRGC’s ground work on Nanotechnology (2005 and 2008).

IRGC risk governance material is used in a variety of fields. Publications that make reference to IRGC concepts and publications in 2015 include, among others:

Risk management	Abrahamsen, E.B., Kenneth Pettersen, Terje Aven, Mareile Kaufmann and Tony Rosqvist: A Framework for Selection of Strategy for Management of Security Measures , <i>Journal of Risk Research</i> .
Nanotechnology	Shapira, Philip and Jan Youtie: The Economic Contributions of Nanotechnology to Green and Sustainable Growth , in: Basiuk, V.A. and E.V. Basiuk (eds.), <i>Green Processes for Nanotechnology</i> , Springer International Publishing Switzerland, pp 409-434.
Resilience	Larkin, Sabrina, Cate Fox-Lent, Daniel A. Eisenberg, Benjamin D. Trump, Sean Wallace, Colin Chadderton and Igor Linkov: Benchmarking Agency and Organizational Practices in Resilience Decision Making , <i>Environment Systems and Decisions</i> 35: 185–195.
Science & technology policy	Forsberga, Ellen-Marie, GianLuca Quagliob, Hannah O'Kaneb, Theodoros Karapiperisb, Lieve Van Woenselb and Simone Arnaldic: Assessment of Science and Technologies: Advising for and with Responsibility , <i>Technology in Society</i> 42: 21–27.

Critical infrastructure	Laugé, Ana, Josune Hernantes and Jose M. Sarriegi: Critical Infrastructure Dependencies: A Holistic, Dynamic and Quantitative Approach , <i>International Journal of Critical Infrastructure Protection</i> 8: 16-23.
Public health	Huizera, Yvonne L., Marleen M. Kraaij-Dirkzwagera, Aura Timena, Tjerk Jan Schuitmakerb and Jim E. van Steenbergena: Context Analysis for Epidemic Control in the Netherlands , <i>Health Policy</i> , 119(1): 66-73.
Medicine	Oye, Kenneth A. et al. : The Next Frontier: Fostering Innovation by Improving Health Data Access and Utilization , <i>Clinical Pharmacology & Therapeutics</i> , 98(5): 514-521.
Natural hazards	Scolobig, Anna: Stakeholder Perspectives on Barriers to Landslide Risk Governance , <i>Natural Hazards</i> 2015: 1-17.

Source: Google Scholar

FEEDBACK

IRGC regularly collects feedback on conferences, workshops and publications. Below is a selection of feedback gathered in 2015:

Reinsurance industry
On the Guidelines for Emerging Risk Governance: “The most useful concepts from my perspective are a) the five step process, and especially the one page overviews of each step, and b) the concept of a risk conductor. I find the report well written and easy to read; I could get an overview quickly and dive deeper in some topics. **I will use the report to frame my thinking and to support internal work on emerging risks.**”

Government (National Security Strategy and Risk Assessment) “Thank you for all the years of good cooperation and **helping us develop a structured way to analyse and deal with risks.** Keep up the good work.”

Electricity industry
On the Demand Response workshop: “Gaining international insights on DR from a diverse range of experts. **Great network opportunities for future collaborations.**”

Academia
On the Demand Response conference: “**I appreciated the idea of gathering contributors from different communities.**This gave the opportunity of having a good vision on the main drivers and expectations for demand response in different environments.”

Insurance industry
On the Cyber Security Risk Governance expert workshop: “The opportunity to hear up-to-date and challenging thinking from academics, risk and security professionals in one session. All very focused on the practical challenges we face. **This workshop provided more perspectives than is normal and provided me with some insight which I can use in my job and my industry.** Also confirmed that the challenges my organisation faces (and that I face in my role) are similar across other areas.”

- Government**
On the Planning Adaptive Risk Regulation (PARR) conference: “The best thing about the conference to hear from the best scientists on this topic where we stand now, what their experience, challenges and their expectations are. **I can use the findings directly for my project on how to deal with uncertainty in policy-science.**”
- Academia**
PARR conference: “**Stimulated my own research** and extended my professional network. **Confirmed my understanding of IRGC as a useful resource.**”
- Science policy**
PARR conference: “Thanks for a great conference – it really was **the most stimulating meeting I’ve been to in years.**”



“ IRGC’s single most important contribution is to serve as a **neutral convening authority**. Bringing people from a wide variety of perspectives together, trying to understand and communicate about **key issues of risk governance** in one of its biggest strengths.

Prof. Granger Morgan, Chairman, IRGC Scientific & Technical Council

4 IRGC ORGANS AND NETWORK

IRGC is governed by a **Foundation Board**, which acts as the main strategic, oversight and decision-making organ. The **Scientific & Technical Council** (S&TC) is the leading scientific authority, providing quality assurance and scientific input to the work programme. The collaborative activities are facilitated by a **Secretariat**, which manages joint research initiatives, and carries out general administration, communication and dissemination of project work.

The list below includes all individuals who have served on one of IRGC's organs in 2015. IRGC would like to thank everyone for their contribution.

MEMBERS OF IRGC ORGANS

Foundation Board



Philippe Gillet
(Chairman)
Vice-President and
Provost, EPFL,
Switzerland



Charles Kleiber
(Vice Chairman)
Former State Secretary
for Education and
Research, Switzerland



John Drzik
President, Global Risk
and Specialties, Marsh,
Inc.; Chairman, Marsh &
McLennan Companies
Global Risk Center, USA



Daniele Tonella
CEO, AXA Technology
Services, France



Christian Mumenthaler
CEO Reinsurance and
Member of the
Executive Committee,
Swiss Re, Switzerland



WANG Weizhong
Former Vice Minister,
Ministry of Science and
Technology, People's
Republic of China



Margareta Wahlström
Assistant Secretary-
General, Special
Representative of the
Secretary-General for
Disaster Risk Reduction
(UNISDR), Switzerland

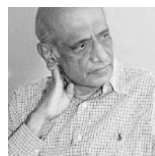


In memoriam:
José Mariano Gago
1948 – 2015
Served on the Board
2004 - 2015

Scientific &
Technical Council



Prof. Granger Morgan
Chairman
Carnegie Mellon
University, USA



Dr. V.S. Arunachalam
CSTEP, India



Prof. W. Bruine de Bruin
Leeds University
Business School, UK



Prof. Luis A. Cifuentes
Pontificia Universidad
Católica, Santiago, Chile



Dr. Gérard Escher
EPFL, Switzerland



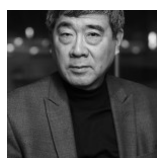
Prof. John Graham
Indiana University, USA



Manuel Heitor
Minister of Science,
Technology and Higher
Education, Portugal



Prof. Janet Hering
ETHZ; EPFL; EAWAG,
Switzerland



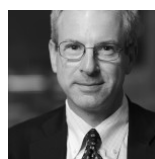
Prof. Kenneth Oye
Massachusetts Institute
of Technology (MIT),
USA



Prof. Arthur Petersen
University College
London, UK



Prof. Ortwin Renn
University of Stuttgart,
Germany



Prof. Jonathan Wiener
Duke University, USA



Prof. XUE Lan
Tsinghua University,
China

Secretariat



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THE IRGC NETWORK

IRGC aims to reach a **global community of public and private policy-makers** while simultaneously ensuring a strong local, contextual and cultural rooting. In order to achieve this aim, IRGC adopted a decentralised structure and facilitates a network of academic and scientific institutions active in the field of risk governance.

Thanks to the **cooperation and knowledge transfer** that occurs among its network members, this structure allows IRGC to address the diversity of cultures and contexts, to maximise its impact in terms of geographic outreach, to deal with diverse audiences, and to increase its economic efficiency.

Every network member is an active contributor to IRGC's work, whether via the provision of funding, expertise, and research work, or a combination of these. In return, members benefit from access to the entire network and the significant **pool of knowledge** and useful contacts this represents.

FUNCTIONS AND MEMBERS OF THE NETWORK

Network members work with IRGC organs to develop activities in the following context:

1. Facilitation of collaborative international activities in the field of risk governance. IRGC provides a neutral convening platform for workshops and conferences, disseminating results of academic applied research to the international, public and private sector
2. International cooperation in education, communication and outreach to decision-makers in risk governance, such as educational and training programmes in risk governance at the PhD and executive level
3. Development of specific risk governance policy options and recommendations based on substantive analysis. These (network partner led) activities identify, frame, draw attention to and analyse ignored, neglected or emerging risk issues

CURRENT IRGC NETWORK MEMBERS AND AFFILIATES

- North America**
 - Carnegie Mellon University, Department of Engineering and Public Policy, USA
 - Indiana University, School of Public and Environmental Affairs, USA
 - Massachusetts Institute of Technology, Program on Emerging Technologies, USA
 - Duke University, Program on Rethinking Regulation, USA
- Europe**
 - IRGC Portugal (a research consortium based at IST Lisbon)
 - The Helmholtz Alliance ENERGY-TRANS, Germany
 - University College London, Department on Science, Technology, Engineering and Public Policy, UK
- Asia**
 - Center for Science, Technology and Policy (CSTEP), India
 - Tsinghua University, School of Public Policy and Management

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