

**An OECD Symposium to celebrate
The 20th Anniversary of the Global Science Forum (GSF)
and the 100th Session of the Committee for Scientific and Technological Policy (CSTP)**

New Science-Based Tools for Anticipating and Responding to Global Crises

April 18, 2012
OECD Headquarters
Paris, France

Rationale

Natural and man-made crises have become a distressingly familiar feature of the globalised world. Often, the crises are complex in nature, global in scale, and are the result of multiple, unanticipated, inter-related events on many spatial and temporal scales. Governments are strongly motivated to understand and anticipate these crises, to mitigate their effects, and to recover from their consequences. Science and technology are among the tools that governments have at their disposal in these efforts.

The premise of the OECD Symposium is that new types of scientific inquiry, and new modes of science/policy interactions, are emerging: they are based on the ability of researchers to analyse and to make reliable forecasts about policy-relevant phenomena that have, until now, been seen as lying outside the scope of useful scientific analysis. Typically, these are systems and networks consisting of vast numbers of individual elements that interact in complicated ways. Examples are: biological ecosystems, disease pandemics, financial markets, energy generation and distribution networks, continent-scale systems combining geological, biological and human elements, as well as societal phenomena such as urbanisation and migration.

In recent years, scientists have developed new principles, theories, models, and computational tools for dealing with such complex phenomena in ways that promise to produce information and advice for policymakers. However, the emergence of new tools and capabilities raises a number of questions regarding their ability to better predict complex events (compared with more traditional methods), the availability of data and indicators needed to both build and assess these new tools, and the challenge of transforming the results of complex analyses into actionable advice for policymakers and other stakeholders.

The joint GSF/CSTP anniversary Symposium will bring together GSF and CSTP delegates, OECD staff, and invited experts: natural and social scientists, economists, representatives of financial, energy, health, environmental and disaster-reduction agencies and institutions, plus officials of relevant governmental bodies.

The expected outcome of the Symposium will be a better understanding and communication of the potential of novel science-based modelling for anticipating and responding to complex global crises, insights about policy-related mechanisms for evaluating and using these tools, and leads for the future OECD programme of work concerning the application of such tools in new policy areas.

Background

The potential utility of S&T for anticipating and managing crises has already been examined by the GSF and the CSTP:

In October 2008, the Global Science Forum convened a workshop entitled “Applications of Complexity Science For Public Policy: New Tools for Finding Unanticipated Consequences and Unrealized Opportunities” asking the essential question:

“How can the insights and methods of complexity science be applied to assist policymakers as they tackle difficult problems in policy areas such as health, environmental protection, economics, energy security, or public safety?”

The report published in September 2009 (<http://www.oecd.org/dataoecd/44/41/43891980.pdf>) provides a series of relevant insights.

In parallel, the Committee for Scientific and Technological Policies undertook a series of activities to examine the Science, Technology and Innovation contributions to addressing global challenges. The Committee is continuing to identify new tools and methodologies for a better understanding the socio-economic impact of S&T policies, which may be of particular interest to analyse, for instance, economic or disaster recovery policies.

Of similar relevance is the recent publication on “[Future Global Shocks](#)” produced by the International Futures Programmes of the OECD, which analyses the risks present in large-scale system interdependencies and the propagation of risks across global systems.

Organisation

The Symposium will take place in the conference centre of the OECD headquarter in Paris. It will be conducted according to the methodology that the GSF has used successfully in recent years: bringing together a diverse set of participants, with an emphasis on targeted discussions using a set of questions that are distributed well ahead of time.

Each session will feature a keynote speaker who will introduce the principal topic and offer some preliminary answers to the questions that are posed in the agenda. A small panel of respondents will be invited to react to the keynote presentation. The bulk of each session will be devoted to debate among the attendees, directed by a session chair/moderator. The discussions will not be devoted to in-depth analyses of diverse types of threats, or to specific past events, but will rather be focused on the main generic issues, concrete examples being introduced and described only as needed to support the debate.

Provisional agenda of the Symposium (including notional questions for discussion)

Morning: Session 1

45 mins. Introduction (rationale and objectives) to the Symposium. A brief history of GSF and CSTP.

2 hrs. 15 mins. Understanding/anticipating/modelling of crises

Keynote: [Carlo Jaeger](#), Potsdam Institute for Climate Impact Research, Head of research domain Transdisciplinary Concepts & Method (invited, TBC)

Respondents:

- Akinori Yonezawa, Deputy-Director of AICS (RIKEN Advance Institute for Computational Science) which is operating K Computer (http://aics-research.riken.jp/message_e.html)
 - [Robert Madelin](#), Director General, Information Society and Media Directorate General, European Commission (invited, TBC)
 - Arnaud Banos, Director, [Institut des Systèmes Complexes – Paris Île-de-France](#)
 - [Alan Kirman](#), (invited, TBC) Director of Studies, Ecole des Hautes Etudes en Sciences Sociales (EHES),
- What are recent crises teaching us regarding current models and their limits?
- Which important phenomena could now be most advantageously analyzed, modelled, and explained using advanced scientific methods (for example, speculative financial bubbles and panics, extreme weather events and other natural catastrophes, breakdowns in critical infrastructures, various forms of destructive collective behaviour by individuals or institutions, the influence of modern communication technologies in the diffusion and/or regulation of crises)?
- Which new scientific concepts and techniques offer the greatest promise for generating useful policy-relevant outcomes (e.g., emergence, network analysis, agent-based models, qualitative vs. quantitative modelling)?
- What is the level of maturity of basic research and applied modelling in the field? What reliable, actionable results are already available, and when can more results be expected?
- How could access by researchers to relevant economic and social data be assured?

Afternoon: Session 2

2 hrs Responding to crises and optimising the science-policy dialogue

Keynote: [Yuichiro Anzai](#), President of the Japan Society for the Promotion of Science (JSPS)

Respondents :

- [Julia Lane](#), Program Director of the Science of Science & Innovation Policy program at the U.S. National Science Foundation
- [Rainer Sachs](#), Head of Group Accumulation and Emerging Risks, Munich Re

- [Tom Downing](#), Affiliated Senior Research Fellow at Stockholm Environment Institute Oxford, President and CEO of the Global Climate Adaptation Partnership
- What types of results (e.g., probabilistic predictions) can be expected from scientific analyses, and how could they be communicated to potential users (using, for example, novel visualisation tools and even interactive bi-directional interfaces)?
- How can complex science-based modelling products be communicated to policymakers (role of intermediary bodies/individuals) and then translated into action (particularly when having multi-national impact)
- How can science-derived policy actions on complex socio-economic systems be assessed?
- What is the influence of public opinion and trust, and of social phenomena in general, in the generation and diffusion of crises?

Afternoon Session 3

1 hr Conclusions: future directions for researchers, policymakers and OECD

- [Hiroshi Nagano](#), Chairman of the Global Science Forum
- [Luis Sanz-Menéndez](#), Chairman of the Committee for Scientific and Technological Policy
- What are the desirable components of research programmes to advance the field?
- Should GSF, CSTP (and OECD in general) undertake additional work in this area?

Evening: Reception