South East Asia Government
Science Advice Workshop

Science Advice in Emergencies

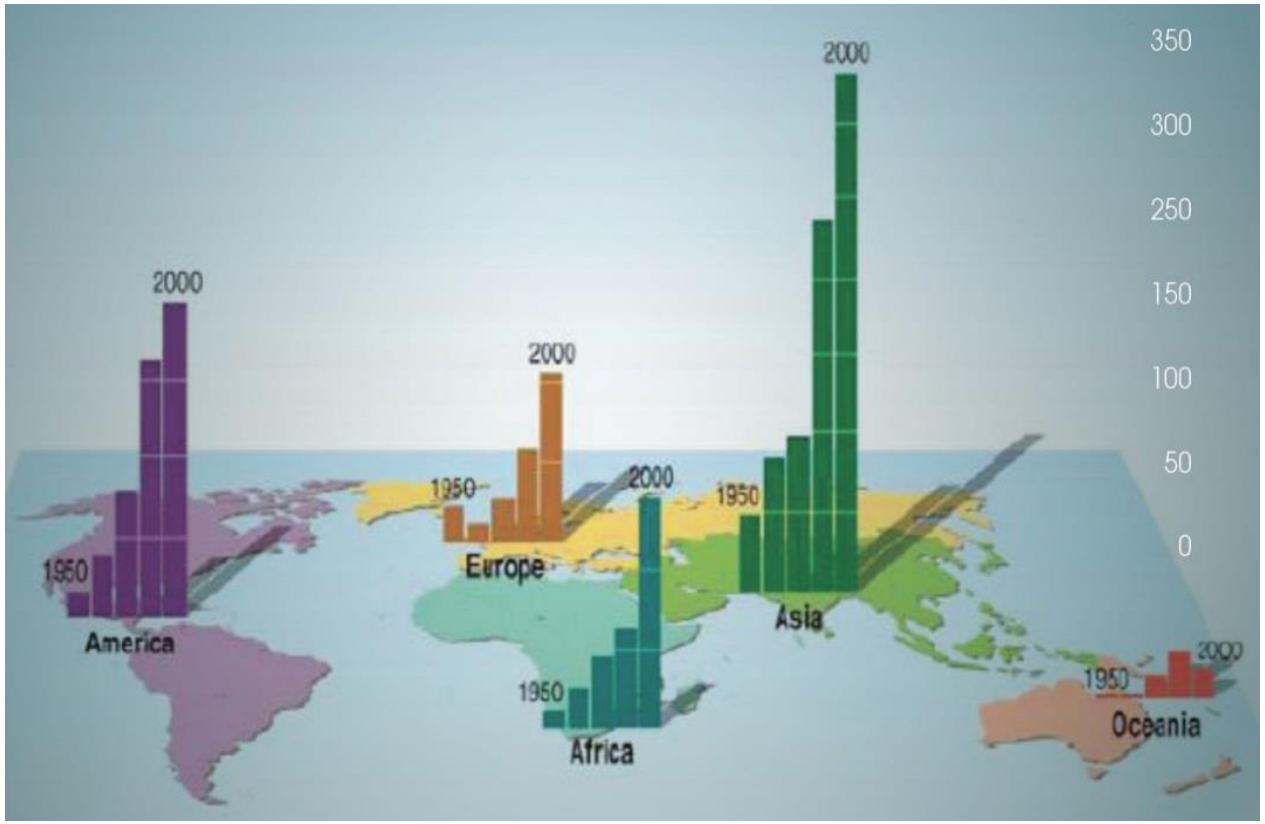
12 June 2017, Tateo ARIMOTO
Professor of STI Policy Program,
National Graduate Institute for Policy Studies(GRIPS) &
Principal Fellow of Japan Science & Technology Agency(JST)

Contents

Typical examples for Science Advice in Emergencies

* Zika virus epidemic (ex. Brazial)
* Ebola virus epidemic (ex. West Africa)
* Earthquake (ex. L'Aquila in Italy)
* Volcanic eruption (ex. Iceland–Europe)
* Flood and Drought (ex. Southern Asia)
* Nuclear disaster (ex. Fukushima)
* Oil spill (ex. USA)
* GMO disputes (ex. Europe)
* Drug safety
* Food safety
* Climate change
* Emerging technologies (ex. AI, Robotics,Genome)

Major Floods Per Decade;



During the past decade, weather patterns in Thailand have fluctuated from severe droughts to severe floods.

In 2008, the population suffers from severe drought , million people in 71 provinces were affected by water shortages.

Intense rainfalls in 2011 resulted in the worst floods in Bangkok's recent history.

Strengthening the science–policy interface for UN Sustainable Development Goals: 2030 Agenda

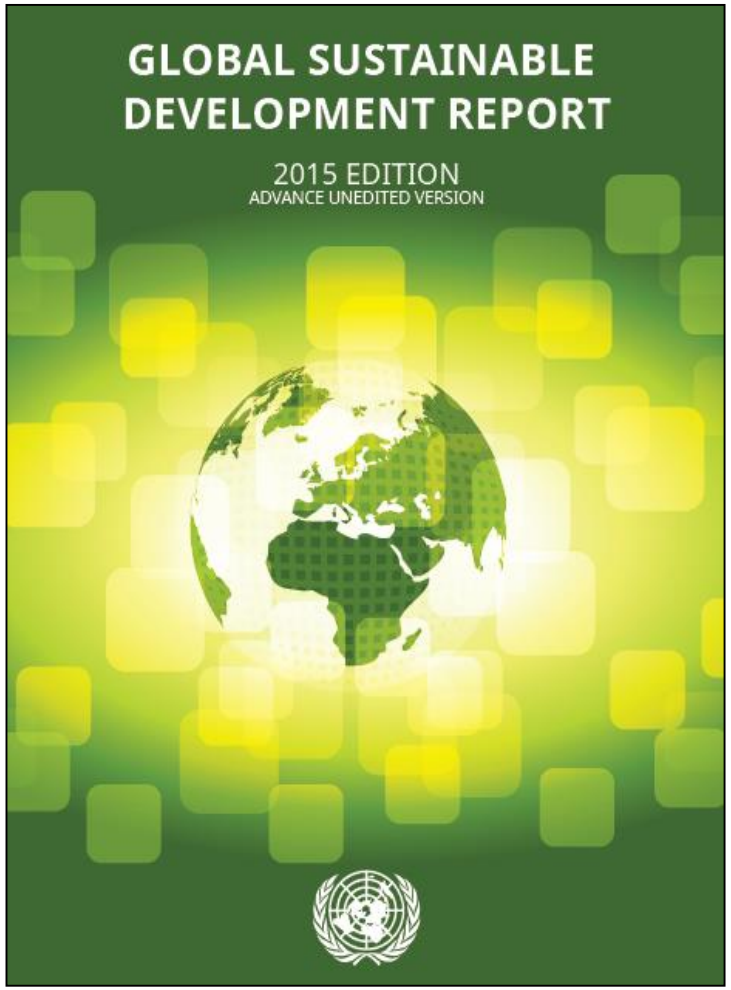
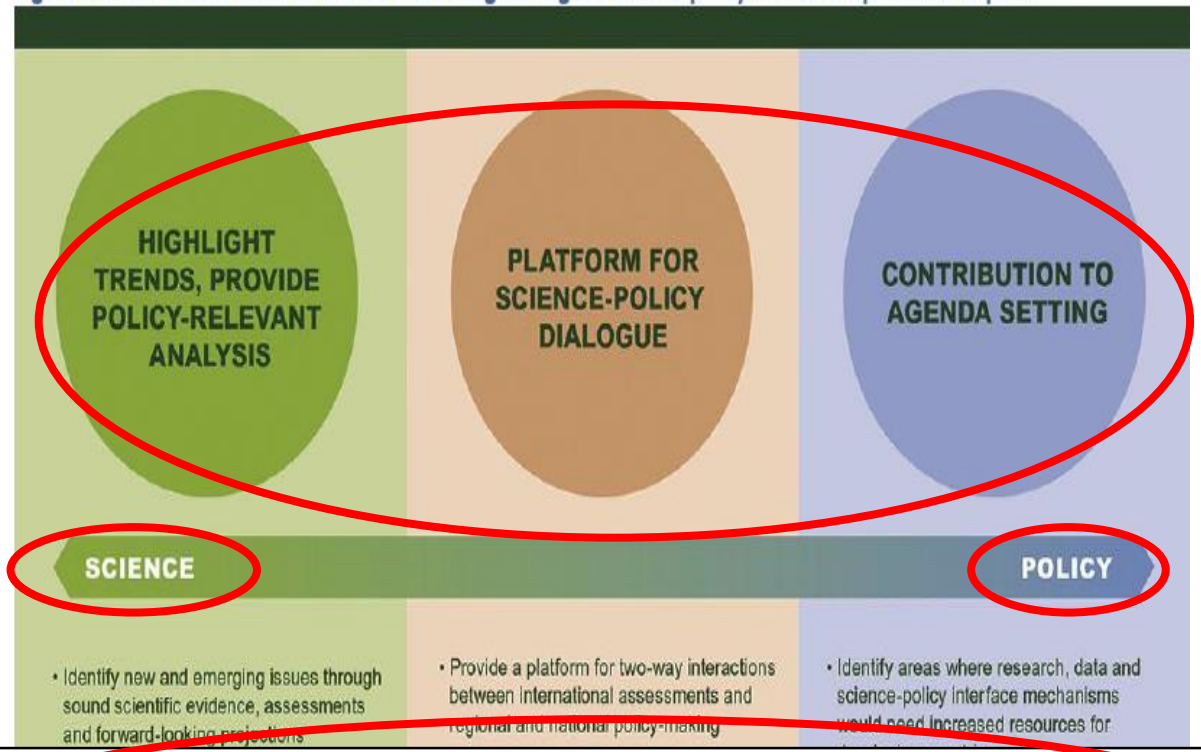


Figure ES-0-1. Possible roles for the HLPF in strengthening the science-policy interface: opinions of experts



Resolution by the General Assembly, September 2015
” Transforming our world: the 2030 Agenda for Sustainable Development ”

Multi-stakeholder Forum
on Science, Technology and Innovation (STI) for the Sustainable Development Goals,
1st: 6-7 June 2016, 2nd :15-17 May 2017

Sustainable Development Goals (SDG)

Goal 1. End poverty in all its forms everywhere
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3. Ensure healthy lives and promote well-being for all at all ages
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5. Achieve gender equality and empower all women and girls
Goal 6. Ensure availability and sustainable management of water and sanitation for all
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 10. Reduce inequality within and among countries

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

Goal 12. Ensure sustainable consumption and production patterns

Goal 13. Take urgent action to combat climate change and its impacts*

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

Here are examples by Japan' efforts in the past decades for SDGs. We can transform our society by combination of technological innovation & social innovation.

SDGs Goals :
#2,3,6,7,8,9,11,12,14,15
social cohesion, stability & peace

Present

Mt.Fuji

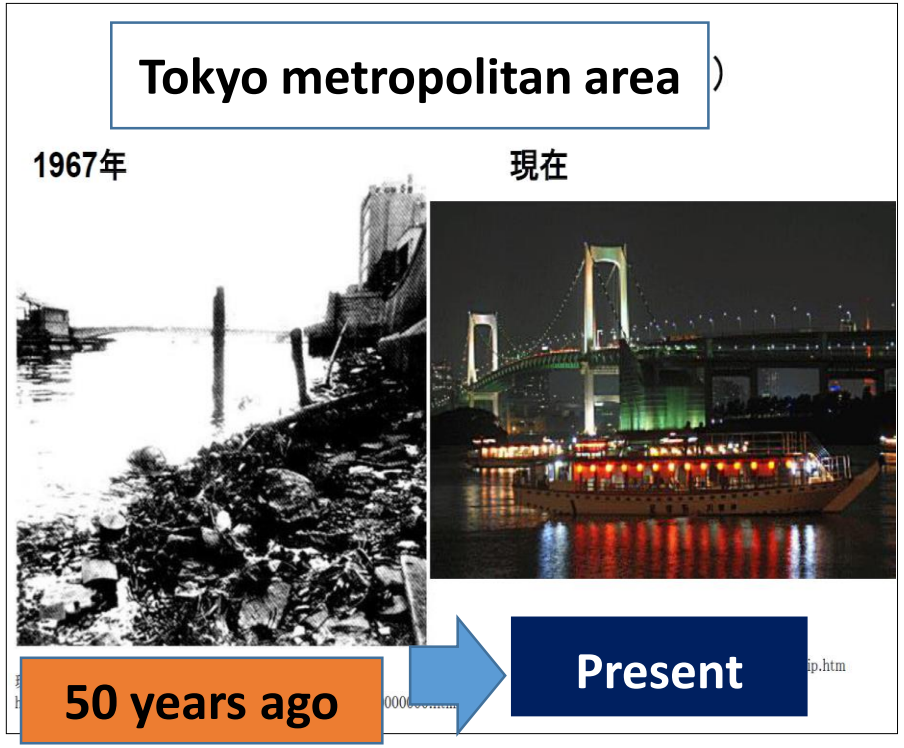
50 years ago

Industrial area in Kyushu

50 years ago

Present

Tokyo metropolitan area



50 years ago

Present

OECD/GLOBAL SCIENCE FORUM (GSF), "Scieitific Advice for Policy Making : THE Role and Responsibility of Expert Bodies and Individual Scinetists"

* Project approved (Apr 2013) : Co-chairs (JPN,NLD,DE,ITA).
  Project membership : 14 countries & EU and observer countries.
* Interviews with over 60 advisory experts, legal experts and decision-makers
* Review of literature and existing frameworks
* Tokyo and Berlin workshops (Oct 2013 and Feb 2014)
* Final report published April 2015
* OECD-CSTP ministerial meeting (Oct 2015) ⇒ Further works

Findings / Highlights

* Current landscape of advisory systems
* Advisory processes :
  ①Framing of the question, ②Selecting the advisors,
  ③Producing advice, ④Communicating & using the advice,
  ⑤Assessing the impact
* Responsibility and potential liabilities
* Providing science advice in crisis situations
* Emerging issues : ①Global societal challenges,
  ②Growing involvement of civil society

2nd phase OECD/GSF Project;

"Science Advice: International Co-operation and Exchange of Data and Information during Transnational Crisis", Workshop led by Robin Grime, 7-8 September 2017

Aims

The workshop will explore a number of case studies of major international crises and participants are expected to discuss and analyse these in relation to the following questions:

(1) What are the major challenges for sharing information internationally when responding to transnational crises? How can we address these challenges?

(2) What mechanisms are appropriate for ensuring provision of scientific and technical advice to governments during transnational crises?

(3) How can we ensure that science advice is based on good quality, up-to-date information?

The main focus is on the 'sense making' or situational analysis phase immediately before and after a crisis occurs when decisions have to be made rapidly in a complex and changing environment.

OECD High Level Risk Forum, 5th 8-10 December 2015, Washington DC

The 5th OECD High Level Risk Forum (HLRF) brought together policy makers from 30 governments, practitioners from the private sector and experts from think-tanks and academia to share good practices with the aim to improve the governance and management of complex risks.

Topics discussed:

*** Identifying unforeseen pathways in transboundary risks *Global flows across international and territorial borders**

*** Investing in the resilience of critical infrastructure systems * Strengthening policies for human security against interconnected risks * Future progress and sharing ideas across countries.**

The 5th High Level Risk Forum will explore the opportunity to use foresight to inform how governments contend with long term, economic and social trends that shape major risks and threats. The intended outcomes are to identify gaps in international cooperation and private sector engagement in the planning and preparations for major risks and threats, and identify opportunities for collective action to manage risks more effectively.

Overview of on-going and future HLRF projects

Morocco peer review on risk governance

*** Cross country report on National Risk Assessments**

*** Collecting evidence for effective risk management policies, losses and expenditure**

*** Task Force on Charting Illicit Trade: Trade in counterfeits and pirated goods**

*** Country case studies on public policies to build resilience in Austria and France**

*** Outreach to the OECD Recommendation: cooperation with APEC in the area of managing contingent liabilities**

INGSA #2
(Brussels, Nov. 2014)
⇒
INGSA #3
(Tokyo, 2018)

The 2nd International Network for Government Science Advice Conference:
"Science and Policy Making: towards a new dialogue"
Brussels, 29-30 September 2016

Parallel session I: Responding to <u>global policy challenges</u>
There are an increasing number of global issues that require science advice. Can science advice help to address global issues requiring action at international level? What are the considerations for providing science advice in these contexts? What are the examples from which we can learn what works and what does not work in informing policy-making through science advice at the global level?
Parallel 1.1 Parallel 1.2 Parallel 1.3

Climate change: Science, policy & the road beyond Paris

Migration: Evidence-informed responses to humanitarian crises

Health: Science advice in short- and long-term challenges – from epidemics to chronic diseases

"The Third United Nations World Conference on Disaster Risk Reduction, March 14-18, 2015 in Sendai City, Japan: "Sendai Framework for Disaster Risk Reduction 2015-2030"

V. Role of stakeholders

(b) Academia, scientific and research entities and networks to: focus on the disaster risk factors and scenarios, including emerging disaster risks, in the medium and long term; increase research for regional, national and local application; support action by local communities and authorities; and support the interface between policy and science for decision-making;

VI. International cooperation and global partnership

(c) Promote the use and expansion of thematic platforms of cooperation such as global technology pools and global systems to share know-how, innovation and research and to ensure access to technology and information in disaster risk reduction.

EDITORIAL

The science–policy interface

Sir Peter Gluckman is the Chief Science Adviser to the Prime Minister of New Zealand and is Chair of the International Network for Government Science Advice. Email: peter.gluckman@pmcsa.org.nz

How do we ensure the effective role of science in public policy-making? This well-worn, long-standing question reflects the fact that the answer is not simple. Later this month in Brussels, scientists and policy-makers will convene at the International Network for Government Science Advice (INGSA) Forum to consider the most promising ways forward.

Scientists are often perplexed by the apparent failure of their evidence to affect policy. Despite years of accumulated evidence for anthropogenic climate change, policy-makers have been slow to react. The public health community is frustrated that few countries have adopted effective measures to address obesity. In these and other cases, evidence is often contested, and the policy responses are incremental at best. But policy-makers, too, are vexed by scientists' ability to identify problems, yet frequent inability to place their work in the context of timely and feasible policy solutions.

Often forgotten is that policy-making is messy. Although a tidy, analytically driven cycle of policy-making might seem logical to scientists trained in the tradition of hypothesis generation and testing, policy-making is instead a networked process in which scientific evidence is only one of many inputs. The notion of "evidence" comes in multiple forms. Public opinion polls and anecdotes are often considered "evidence" for a certain course of action. Policy decisions involve balancing empirical data with other arguments.

The place of science is distinguished from other policy inputs by its relative objectivity obtained through formal processes designed to limit bias in data collection and analysis. Much scientific and societal debate emerges because of different views on evaluating the sufficiency of evidence on which to draw conclusions. Moreover, the issues for which scientific input is most needed by policy-makers are the very ones for which the science is often the most complex, multidisciplinary and incomplete. In the absence of easily digestible scientific evidence, Wikipedia can become a policy analyst's best friend. And with the new lure of big data promising policy-relevant revelations, the need to ensure that policy-makers avoid analytical pitfalls is pressing.

Providing scientific advice to government takes place within an ecosystem. It is a combination of actors who are both internal and external to government, with advice that is formal and informal. All of this comes in many guises and is conditioned by context. For instance, there will be different mechanisms for regulatory advice, program development, and cabinet-level decision-making. The latter often occur as informal conversations and brainstorming at opportune moments. National emergencies, by contrast, require instant scientific input through formal channels linked closely to crisis management and risk communication. For more slow-burning policy questions, internal advisors can ensure the integrity of science, while those from outside government—such as academics—are a critical source of analysis and commentary.

"...the place of scientific evidence in policy-making is neither straightforward nor guaranteed..."

But does such an ecosystem not risk becoming a cacophony of complicated chimes for the policy-maker? One way forward is to establish principles that underpin effective science advisory mechanisms across all these dimensions and to build capacity on both the supply and demand sides of advisory processes. INGSA is dedicated to doing exactly this. The network brings together advisors, policy-makers, and scholars from more than 70 countries, with the goal of improving knowledge and practice at the interface of science and public policy. With the science-intensive United Nations Sustainable Development Goals, climate change, and other global challenges now part of many countries' policy discourse, the INGSA Forum will facilitate much-needed dialogue. Although the place of scientific evidence in policy-making is neither straightforward nor guaranteed, our commitment to it has never been more important.

– Peter Gluckman

10.1126/science.aad8037

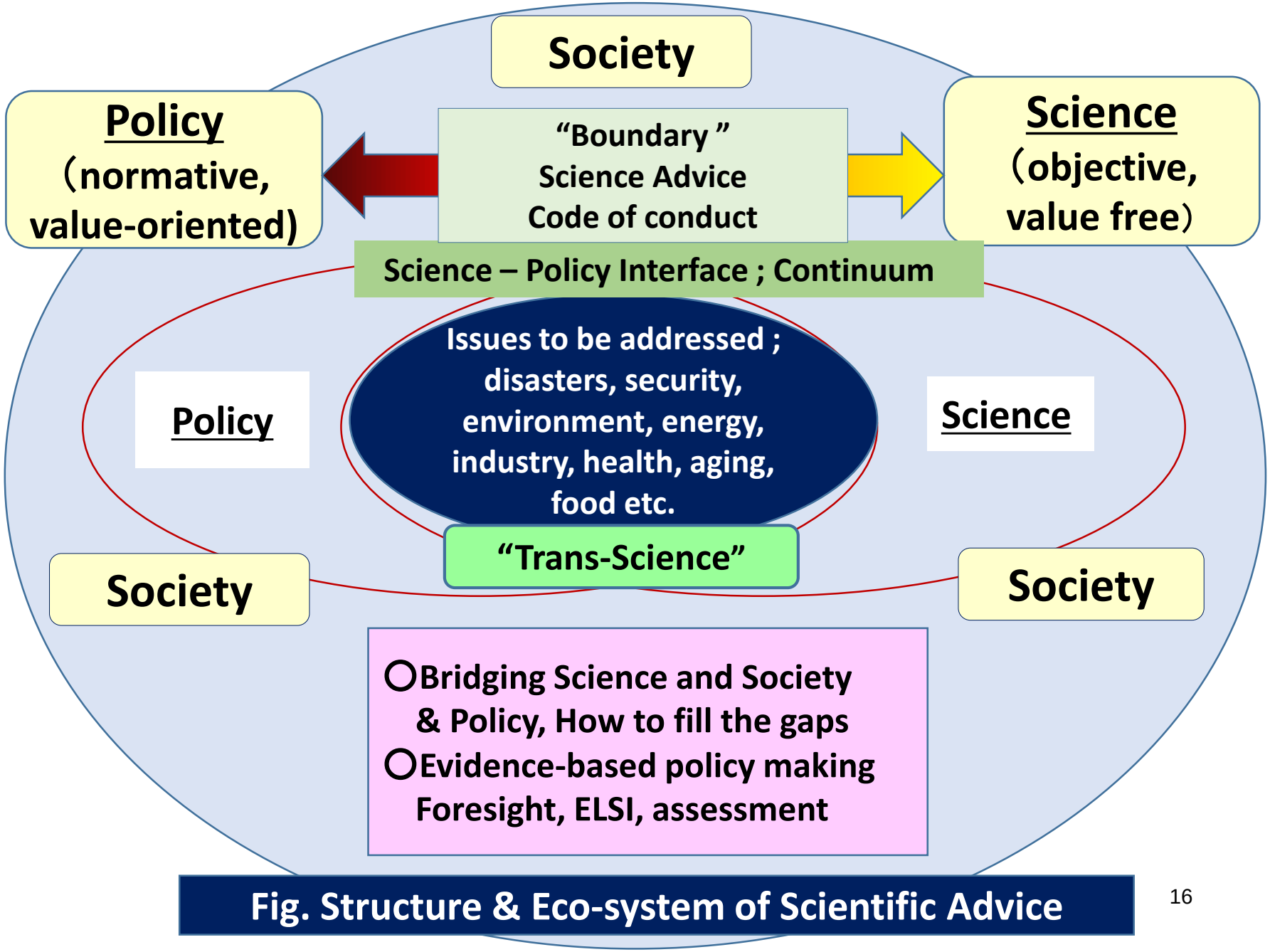
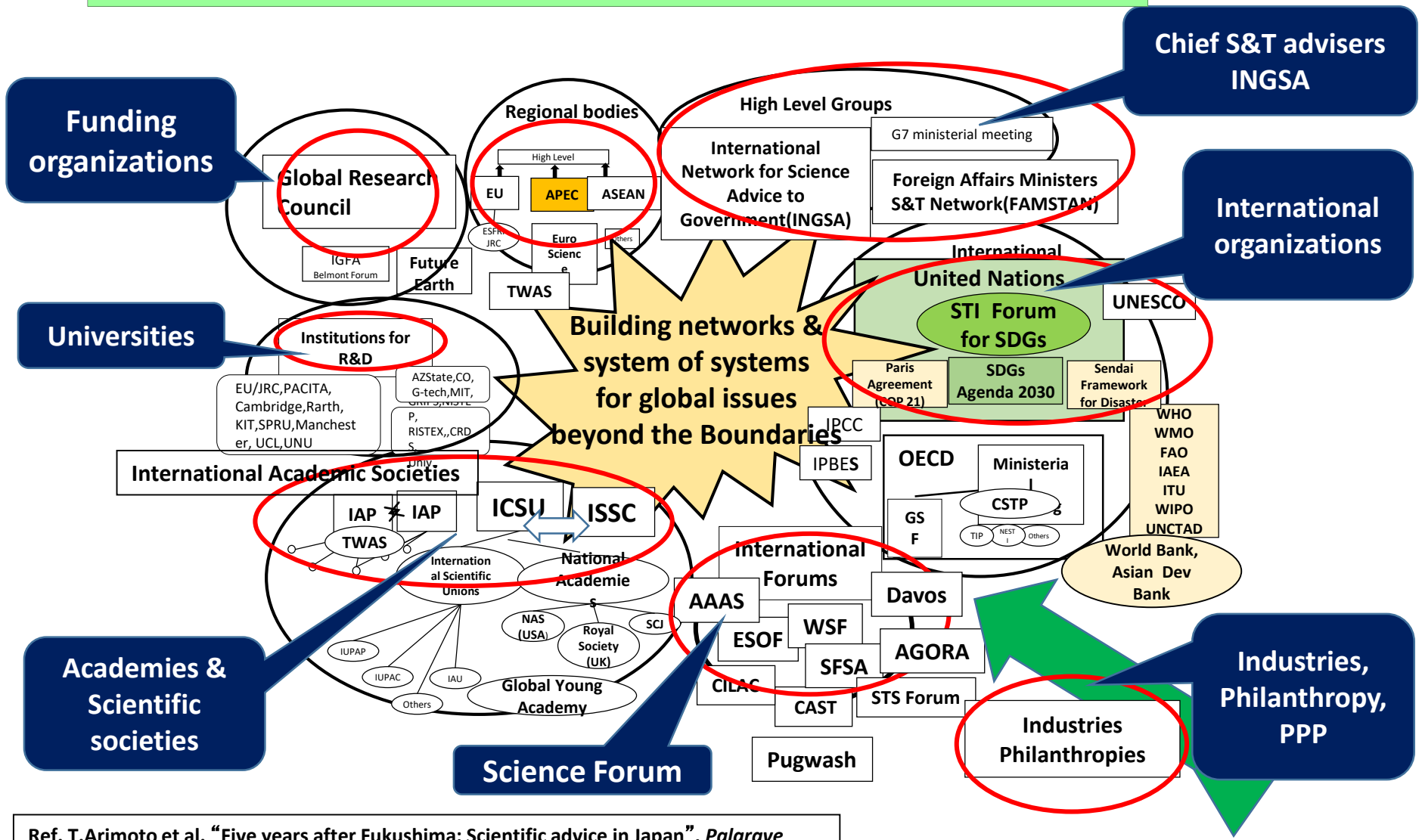


Fig. Structure & Eco-system of Scientific Advice

The International Landscape of Science-Policy Interface for global issues



Ref. T.Arimoto et al. "Five years after Fukushima: Scientific advice in Japan", *Palgrave Communications*, June 2016, and "Building the Foundations for Scientific Advice in the International Context," *Science & Diplomacy*, September 2014

Contents

3.11.2011.
The East Japan Great Earthquake, Tsunami and the Fukushima nuclear accidents

Outlook of the East Japan Great Earthquake

- **Origin Time: 14:46:23, March 11, 2011**
- **Epicenter: Off the Northeast Coast of Japan**
- **Magnitude: 9.0 (Mw)**
- **Casualties: 15,883 deaths, 6,146 injured,**
  2,654 people missing (as of 10 September)

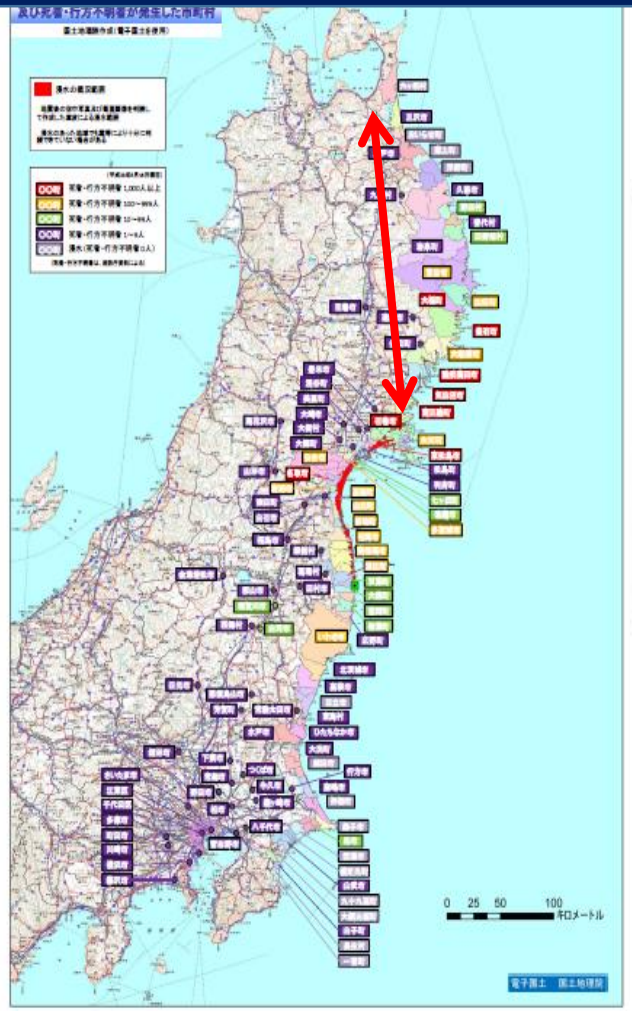
"Cascading disasters"

*** Evacuation, Business supply chain, Transporation etc.**

*** Accident in Fukushima Nuclear Power Plant**

- **The earthquake and subsequent tsunami disabled the reactor cooling systems, and lead to releases of radioactivity.**
- **Triggered a 20 km-radius restricted area.**

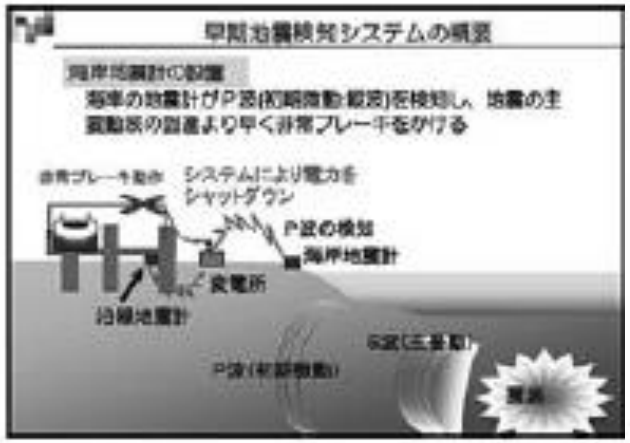
The Bullet trains in impacted area successfully stopped by the early earthquake detection system ; 27 systems running at 300 km/h ⇒ successfully stopped within 100secs(4.4km) without derailments.



History of improving bullet train system to counter earthquake in Japan

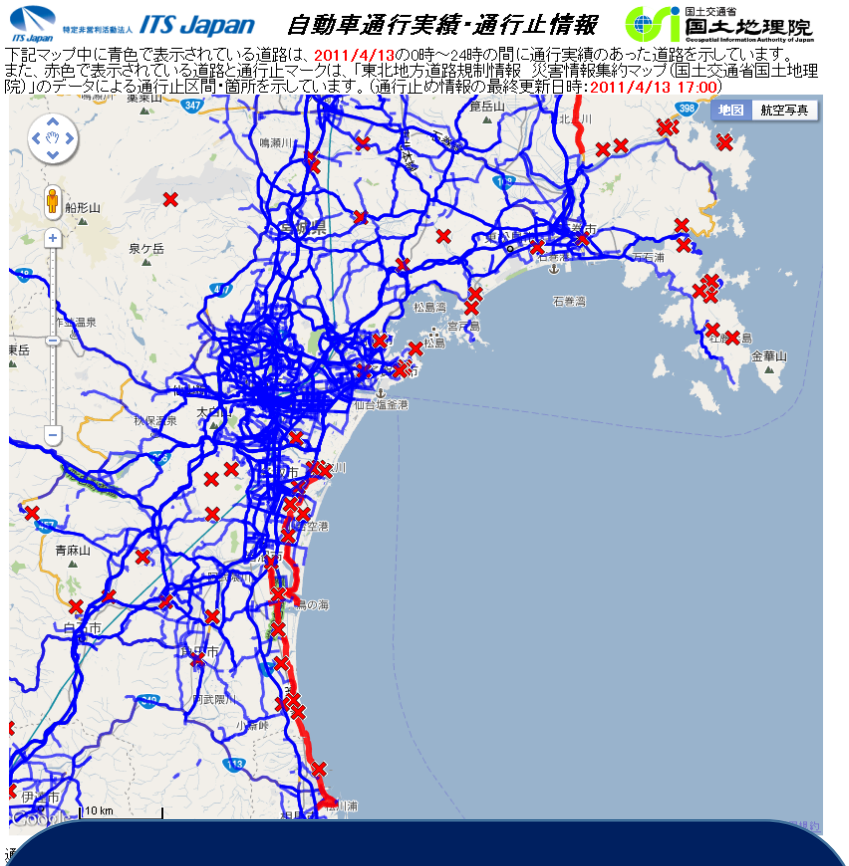
1995 Hanshin Earthquake
2004 Chuetsu “
2011 Higashi-Nippon “

Accumulation of lessons learned & technology development.



Reinforcing pillars, poles and bridges

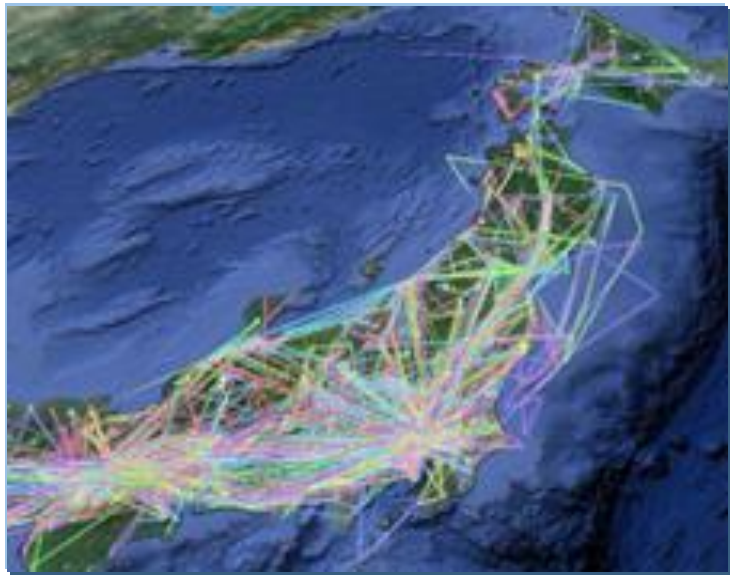
	< damaged area >	<→ normal operation >
1995:	130km	81 days
2004:	90km	66 days
2011:	500km	49 days

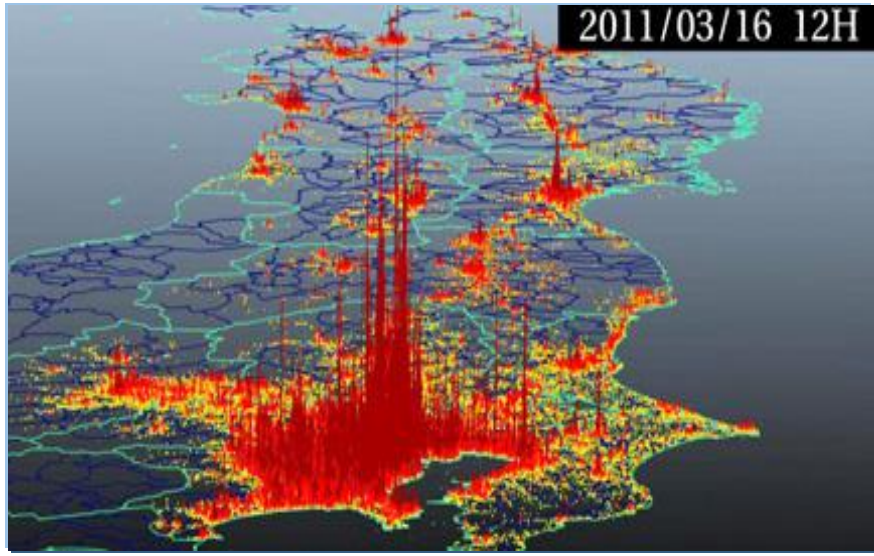


Collecting data and mapping emergency traffic routes available across the impacted areas

←

Intelligent Transport System: car navigation & electronic toll collecting system





“Big Data Science Project for 3.11.2011 disasters”, for redesigning preparedness and future actions.

NHK,ITS(Intellectual transportation system),Google Japan,Twitter Japan etc. have been collecting and analyzing data and information. 8社・団体が、それぞれが有する膨大な災害関連情報を持ち寄り、解析を試みている。あの日人々が何を求め、どう行動したのか、残された映像などからだけでは分からなかった東日本大震災の全貌を「ビッグデータ」から解き明かす。被災地の数十万人の行動の軌跡、車載カーナビに残された車の走行記録、震災１週間でつぶやかれた１億８千万のツイートなど、さまざまなビッグデータから、あのとき大震災と向き合った１人１人の命を見つめていく。

3,000 students of elementary & secondary schools in the impacted area had successfully evacuated, through awareness-raising activities on Tsunami disaster (lectures, workshops and evacuation trainings), and technological development "Tsunami Disaster Scenario Simulators"

"Kamaishi Miracle"

by Prof. Toshitaka KATADA, Disaster Research Center, Gunma Univ.

An education tool "Comprehensive Tsunami Disaster Scenario Simulator" was developed, which can simulate a damage caused by Tsunami, with condition-settings such as crisis-awareness level of local residents triggered by earthquake motion, whether evacuation is recommended or not, daily awareness level of residents on disaster crisis, experience of past Tsunami disaster, in addition to simulating physical reach and height of Tsunami based upon epicenter and magnitude of triggering earthquake.

Developing Comprehensive Tsunami Scenario Simulator for Targeted Areas

Raising Residents' Awareness on Disasters

Upgrading Tsunami Crisis Management Plan

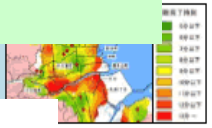
Collaborating with targeted area using Tsunami Simulator

防災意識の向上

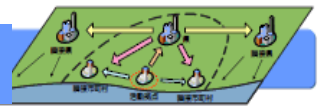
- Lecture Program
- Workshops

計画の高度化

- Identifying issues
- Assisting disaster management planning



Disseminating Awareness-Raising Activities



(Final Goal) Upgrading Disaster-Management Level against Tsunami Nationwide

Continued efforts were made using the simulator, for raising local residents' disaster-awareness level and education in elementary and secondary schools, to create a robust community against Tsunami disaster.

Consequently, in the wake of the Great East Japan Earthquake in Kamaishi-City, senior-grade students have taken a leadership in evacuation, assisting junior-grade pupils and elderly persons, and made a further evacuation from a designated facility to a safer hill by their own judgment, not being trapped by initial prediction, thanks to their high awareness level.

“The Fukushima nuclear crisis” (in OECD/GSF Report)

The response to the nuclear crisis in Fukushima has led to a lot of reflection on how the Japanese government and the scientific community did and should have reacted.

On March 11, 2011, a massive tsunami provoked by an exceptionally large earthquake affected a vast area that included the Fukushima Daiichi Nuclear Power Plant. Disruption of the cooling system for the reactors led to nuclear meltdown and hydrogen explosions, which caused a release of radioactivity outside of the facilities. In a post-crisis analysis, it was found that government officers badly lacked timely access to rigorous scientific information and evidence. Designated advisors to the government, other scientific experts and professional societies were not capable of providing consistent and integrated advice.

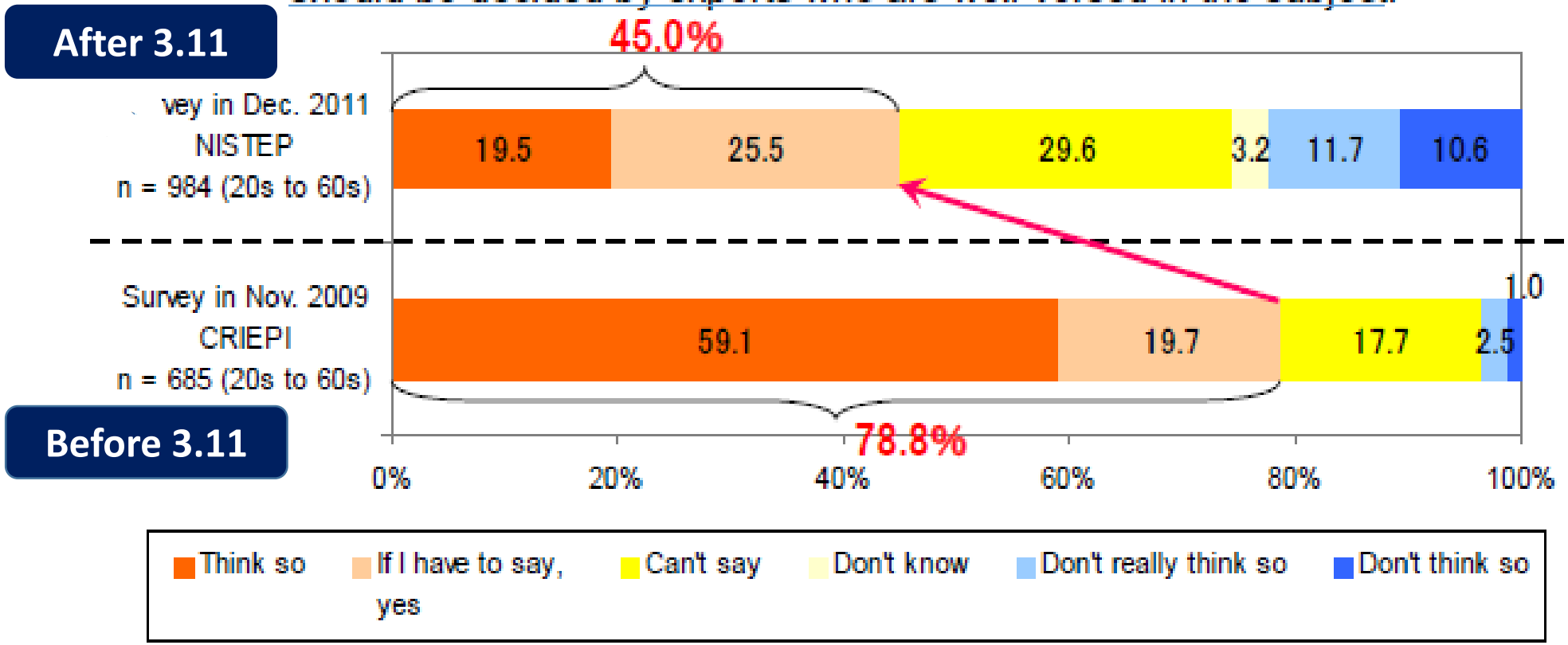
The Japanese government experienced difficulties in taking wholly consistent action.

For instance, restricted areas was set up immediately, but its size was subsequently enlarged several times and evacuation or precautionary safety measures were modified over time without due provision of detailed information to the public. Similarly, information was not communicated to general public, within and outside Japan, with regard to the safety of agriculture produce, marine products and industrial goods. Many scientists and engineers spontaneously transmitted to the public their various opinions on the risks of radiation exposure, and poisoned food and water intake. This confused situations and expanded circulation of numerous rumours among citizens. As a result, an significant drop in public trust in scientists and engineers was noted following the accident.

In response to the event, the Japanese government and scientific community have made efforts to improve the nation's scientific advisory system. A series of international symposia were organized to discuss the roles and responsibilities of scientists and the government.

Should experts decide the direction of S&T ?

Question: What do you think of the following opinion regarding science and technology?
The direction of research and development in science and technology should be decided by experts who are well-versed in the subject.



THIS WEEK

EDITORIALS

Critical mass

Even Japan's political leaders struggle to get answers regarding the Fukushima disaster. It is just the latest example of the government's lack of independent scientific advice.

More than nine months after the nuclear-reactor disaster at Fukushima, fundamental questions about what happened remain unanswered. Without answers to these questions, Japan, and the rest of the world, is in the dark on what went wrong, what must be done now, and how to avoid similar accidents in future.

A Comment in this week's issue summarizes these concerns (see page 313). For the Japanese public, one of the most troubling things about the article should be the identity of its authors: two ruling party politicians, including a former prime minister. Surely they should be able to get some answers?

Following the accident, the Tokyo Electric Power Company, which operated the Fukushima plant, initially released only a heavily redacted nuclear-reactor manual. When finally released in an undoctored format in late October, the manual revealed just how lacking the company was in terms of contingency measures. This concealment gives some idea of why even senior political figures struggled for answers in the wake of the disaster, and why they have now chosen to pose their questions in this very public way.

This all points to a problem in Japan that predates Fukushima and seems to afflict every Japanese regime: the absence of a strong and independent scientific voice to advise the government. In this case, such a voice — be it from a chief scientist appointed by the government or from a truly independent nuclear regulator — could have helped to direct evacuations, medical relief, screening for radiation and decontamination efforts. It also would have helped to lead the studies needed to find answers to the questions mentioned above.

Many times in Japan's recent history, the government has handed responsibility for dealing with issues involving tricky scientific concepts to bureaucrats or politicians. All too often, these officials, not understanding the issues, do what governments shouldn't do — hide the problem and hope it will go away. In the meantime, politicians fumble for answers, while ill-informed government spokespeople tell confused stories that can make them look foolish, irresponsible or deceitful.

This is how the government handled Minamata disease caused by industrial mercury poisoning in the 1950s and 60s, the HIV-tainted blood products problem in the 1980s, and the BSE scare of a decade ago. And now it is how it has handled Fukushima. Fear of spreading panic, for example, prevented warnings being issued on the dangers of radiation predicted by simulations. As a result, more residents than necessary were exposed.

The government's main sources for scientific information for Fukushima were the industry ministry's Nuclear and Industrial Safety Agency and the Nuclear Safety Commission. Although these bodies might have expertise in nuclear-reactor physics, they also have ties to the nuclear industry that create a conflict of interest. And they were not an effective and prompt source for quick decisions on decontamination or health risks. The government recognized this by shifting nuclear monitoring and safety regulation functions to a new, as yet unproven, nuclear-energy agency under the environment ministry. It has also promised to produce its own independent report on the accident, but its workings are far from transparent.

Japan should go further and open broader and more permanent channels for scientific advice. Fukushima should be the incident that finally forces the government to put in place a structure that could bring fast and decisive action on critical situations in the future.

"Politicians fumble for answers, while spokespeople tell confused stories."

Japan could start by following the example of countries such as the United States and the United Kingdom, and take on a science adviser. Five years ago, Japan did claim to establish such a system, installing a scientist as a special adviser to the cabinet (see *Nature* **443**, 734–735; 2006). But that was based more on hopes of encouraging innovation than dealing with the broad range of scientific issues that a proper science adviser takes on — and the experiment lasted only two years. Now there is no science adviser. Efforts to give the Science Council of Japan a more influential role, akin to the US National Academy of Sciences, have also come up short (see *Nature* **428**, 357; 2004).

Scientists can help to understand what is known and, critically, what cannot be known about a situation. In the absence of certainty, they can help to understand the risks involved. They can help to explain this cogently and clearly to people at large. They can do this from an unbiased and apolitical perspective, so that even if circumstances change they can change their assessment with less risk of being criticized for political motives. And they give the politicians both cover for unpopular decisions and, in the case of a political appointee such as an adviser, a trusted personal relationship.

Japan can do better. The Japanese people deserve better. ■

Error of judgment

The European Court of Justice was wrong to weigh in on the definition of a human embryo.

The question of when a formless clump of developing cells can truly be said to become a human will never have a clear answer. It depends on whom you ask: biologists, theologians, anti-pro-life and pro-choice campaigners have all wrestled with the concept for years. Regulations that cover the relevant scientific fields and issues should take all these conflicting views into account. Not everybody will be happy with the outcome, but, by definition, not everybody can be.

In October, the European Court of Justice (ECJ) took on the

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"Politicians fumble for answers, while spokespeople tell confused stories."

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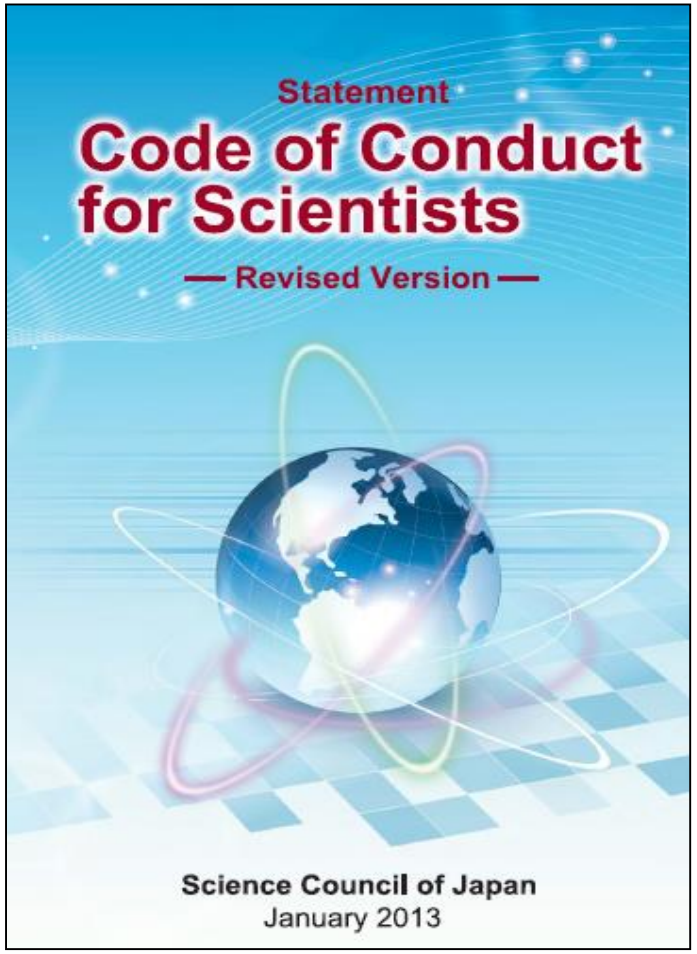
“Code of Conduct for Scientists”
Revision of Science Council of Japan (SCJ)’s Jan 25, 2013



III. Science in Society

(Dialogue with Society)

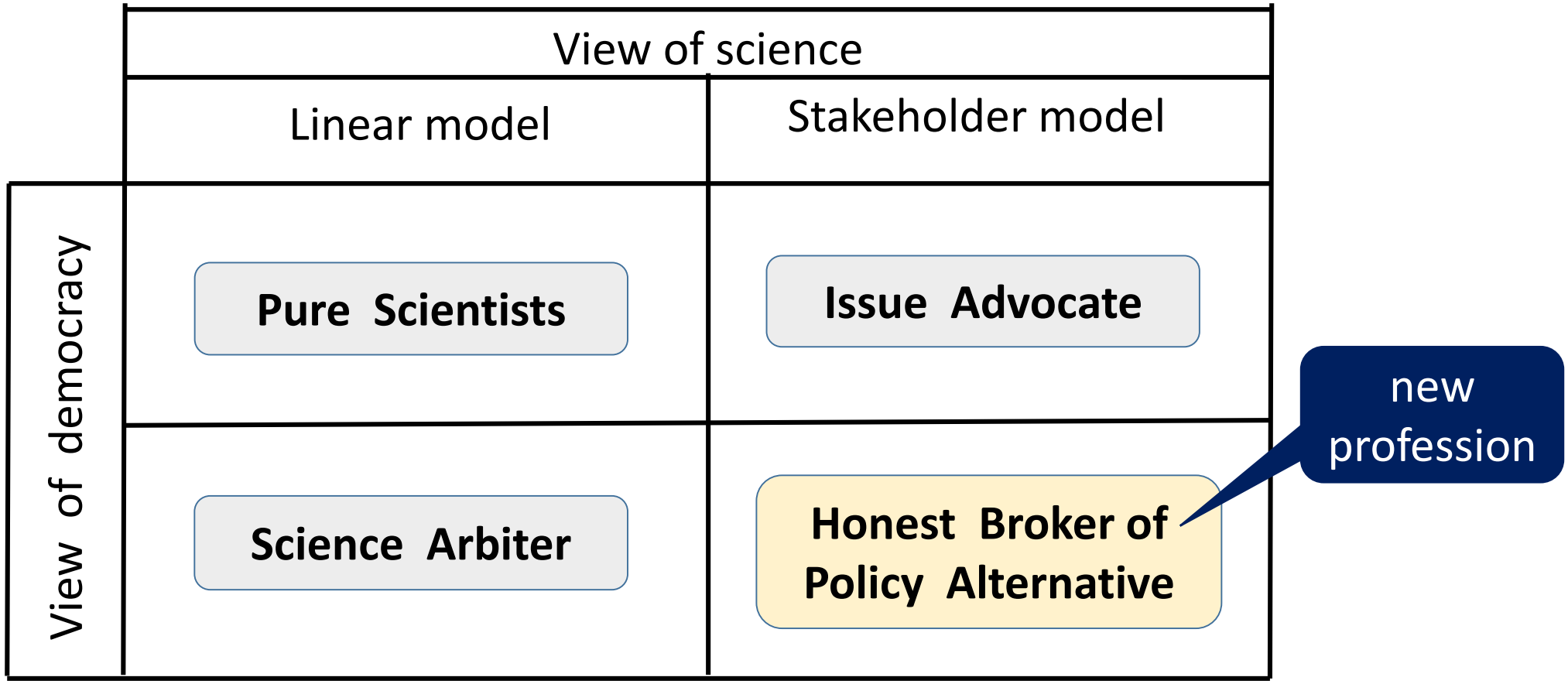
11 Scientists shall participate actively in dialogue and exchange with citizens, for better mutual understanding between society and the scientific community. They shall also strive, in order to resolve various social issues and realize social welfare, to provide policy makers with effective scientific advice. In doing so, they shall aim to give advice based on consensus among scientists; in cases where differences in views exist, they shall explain them lucidly.

(Scientific Advice)

12 Scientists shall conduct research with the objective of contributing to public welfare, and offer sound advice based on objective and scientific evidence. Recognizing the great impact that their statements can have on public opinion and policy-making, they shall be well aware of their responsibility and shall not abuse their authority. They shall also make their best efforts to ensure the quality of their scientific advice, and at the same time clearly explain the uncertainty associated with scientific knowledge as well as the diversity of opinions.

(Scientific Advice to Policy Makers)

13 When scientists provide policy makers with scientific advice, they shall recognize that while scientific knowledge should be duly respected in the process of policy-making, it is not the only basis for decision making. In the event where a policy decision diverging from the advice of the scientific community is made, scientists shall request, as necessary, that policy-makers explain about the decision to society.



"The Honest Broker – Making Sense of Science in Policy and Politics"
by Roger A. Pielke,Jr. 2007

Joint Symposium
By
British Embassy Tokyo and GRIPS,
on 30 May 2011

“Science Advice in a Crisis : Fukushima and its Aftermath”

Prof. Sir John Beddington

SCIENCE & DIPLOMACY

A quarterly publication from the AAAS Center for Science Diplomacy

PERSPECTIVE

The UK Response to Fukushima and Anglo-Japanese Relations

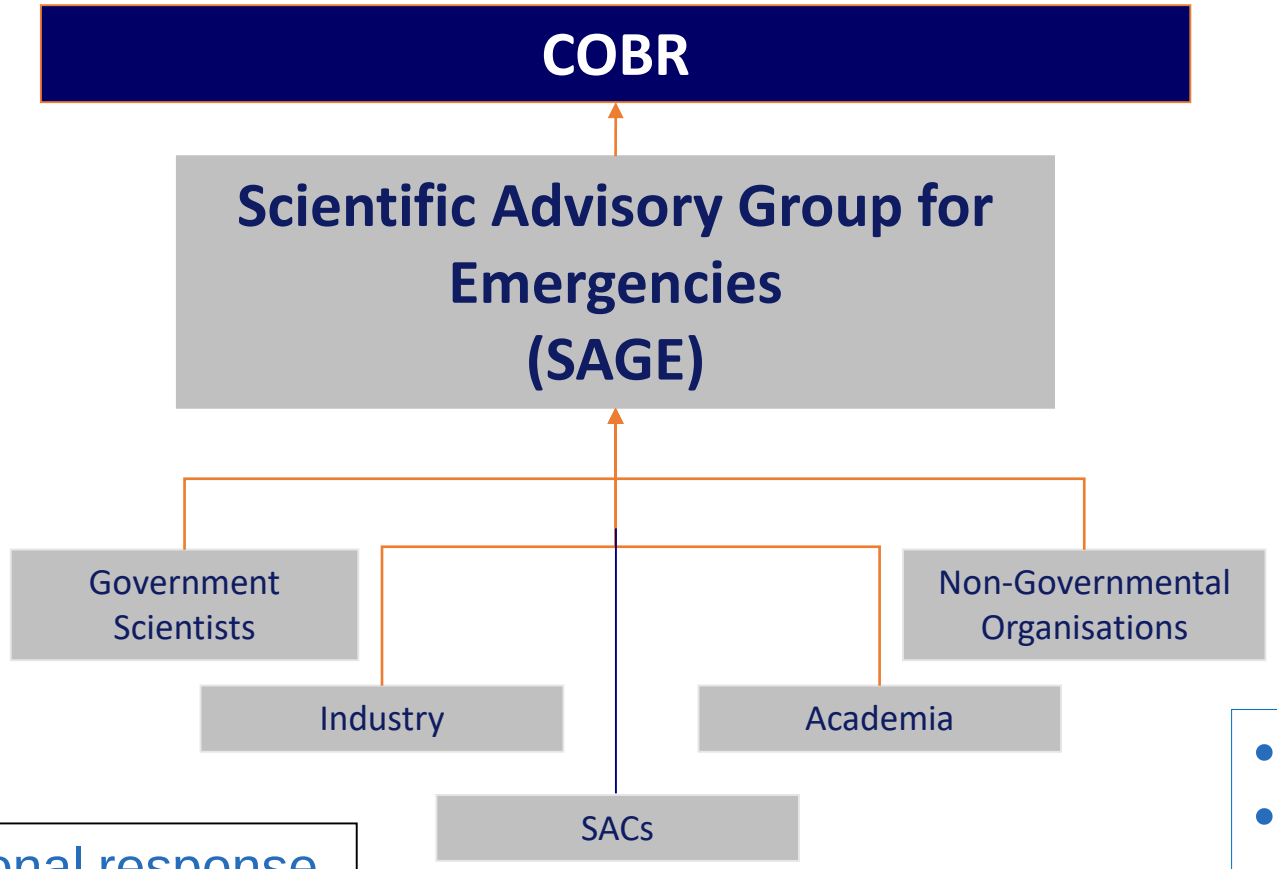
By Robin W. Grimes, Yuki Chamberlain, and Atsushi Oku - 06.16.2014

SCIENTIFIC ADVICE AND COMMUNICATION PLAYED A significant role in the response of the UK government to the accident at the Fukushima Daiichi nuclear power station after the

UK Science Advice Mechanism in Emergencies embedded to the National Crisis management Center

Cabinet Office Briefing Room (COBR): National Crisis Management Center

Cabinet Office, 70 Whitehall, London, England



- Operational response
- Impact management
- Recovery
- Public Information

- **2009 – Pandemic Flu**
- **2010 – Volcanic Ash**
- **2011 – Fukushima**
- **2012 – Olympics**
- **2013 – Flooding**
- **2014 – Ebola**

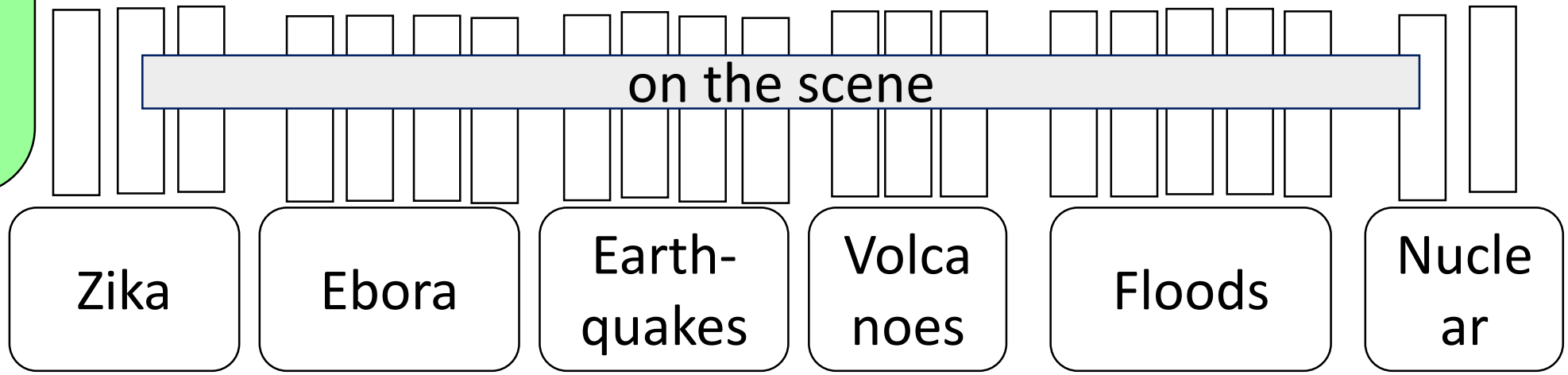
Contents

Science Advice in Emergencies

Different kinds of emergencies & local Communities on the scene

Customization

Asia, Africa…. regions, nations, local communities:
local knowledge, different nature, culture, social system

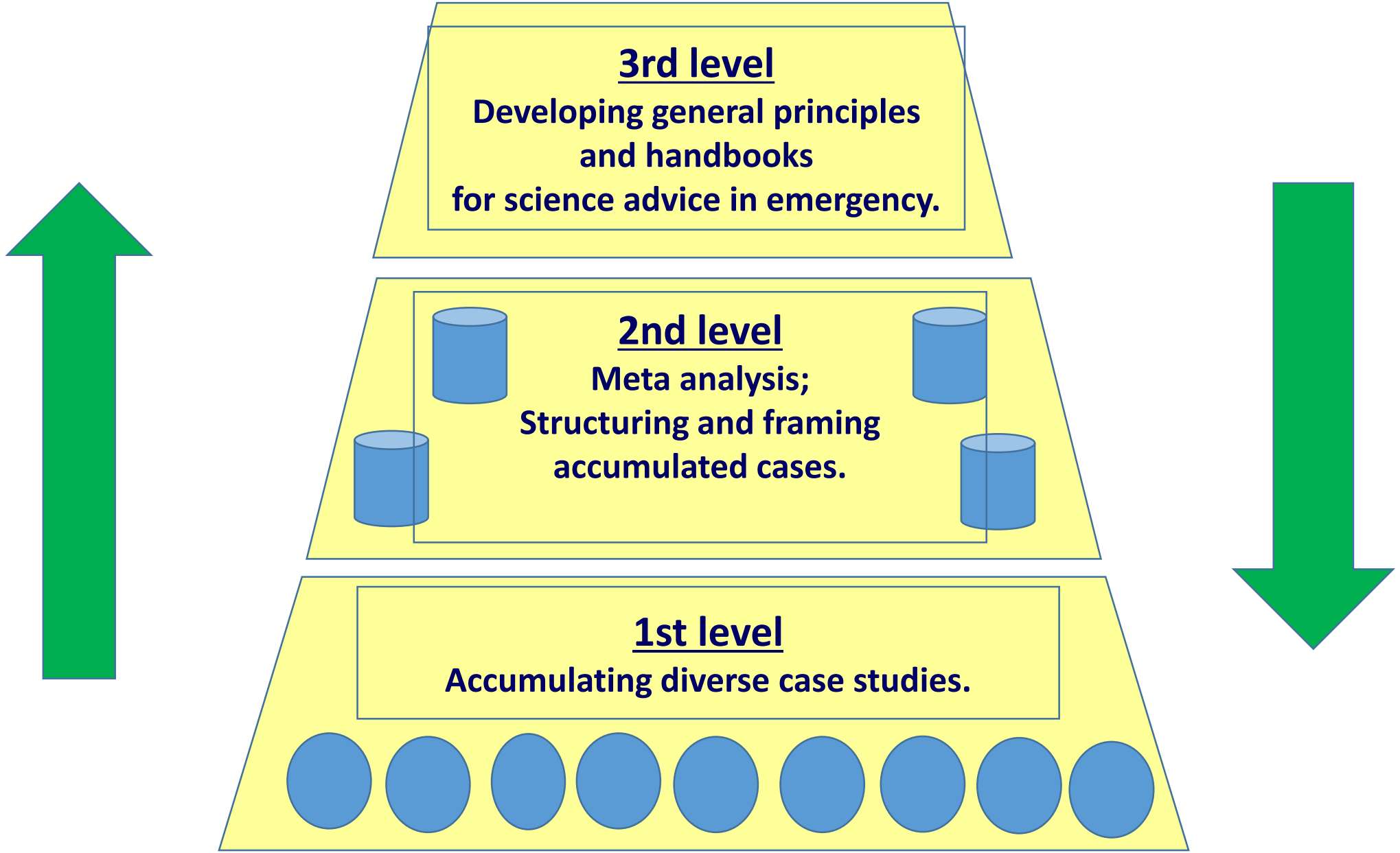


Think globally / act locally and think locally / act globally !!

Global

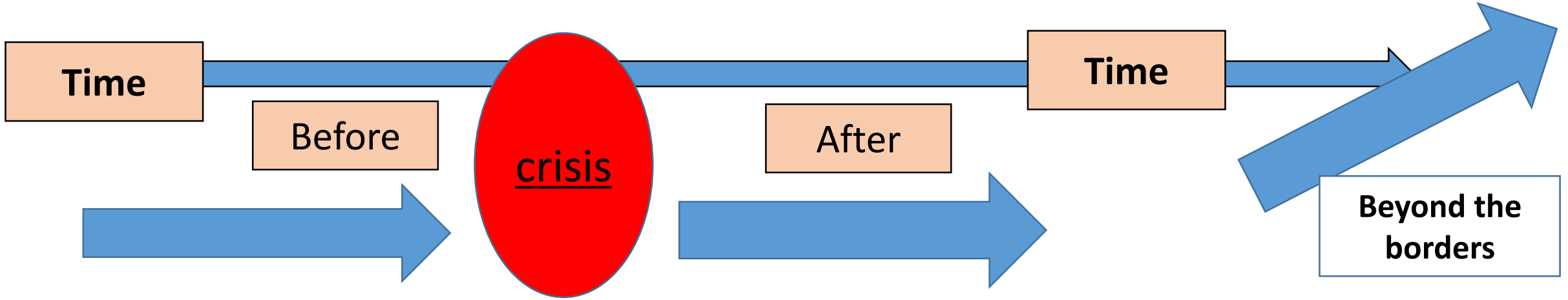
Commonization

Common principles and procedures


3rd level
Developing general principles
and handbooks
for science advice in emergency.
2nd level
Meta analysis;
Structuring and framing
accumulated cases.
1st level
Accumulating diverse case studies.

How to respond effectively and timely to “cascading disasters”

'sense making' or situational analysis phase immediately before and after a crisis occurs when decisions have to be made rapidly in a complex and changing environment.



Earthquake

Tsunami

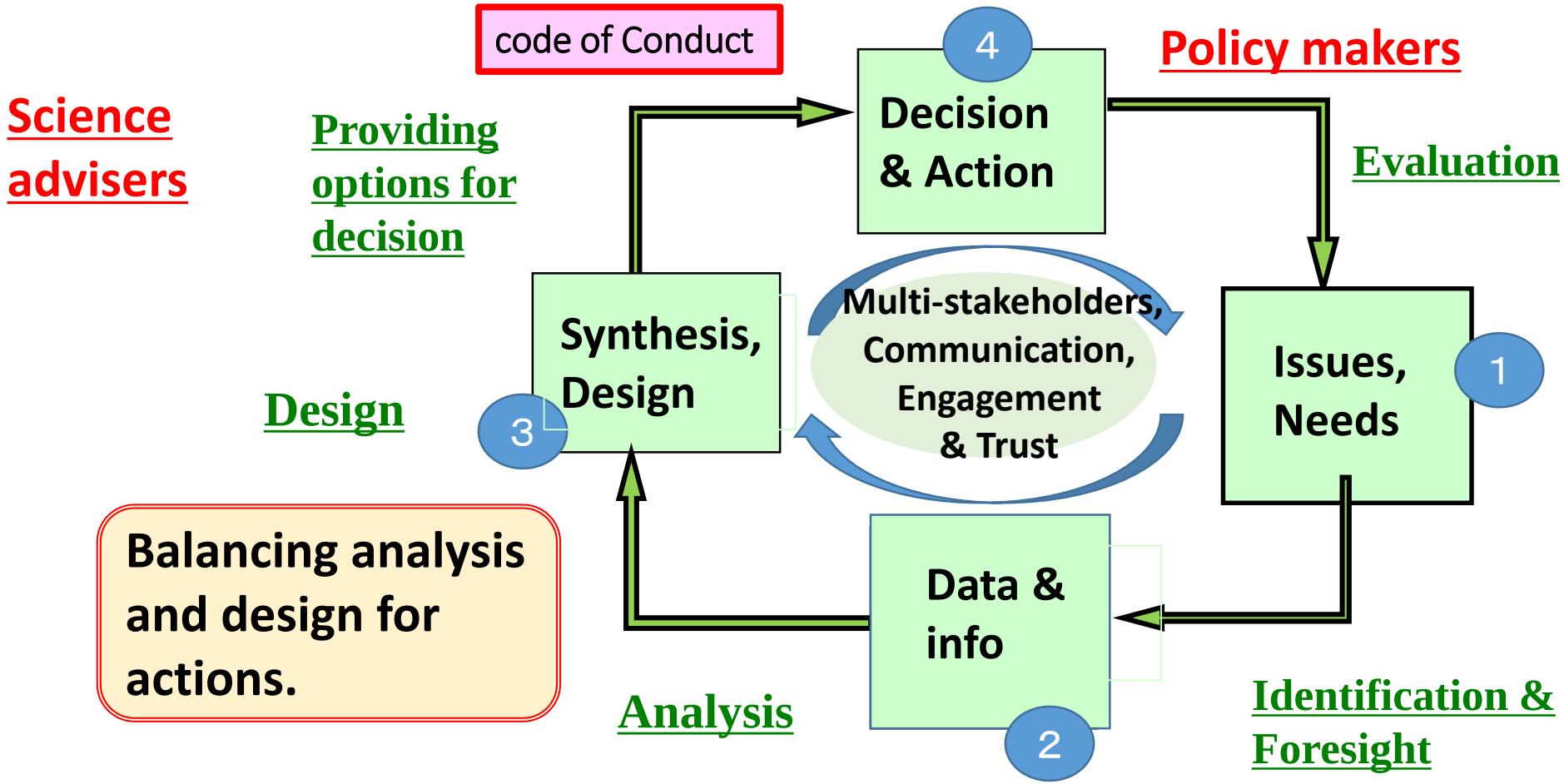
Nuclear accident, Fires…

Transportation: bullet trains, emergency vehicles…

People: evacuation, food, water, clothes, drugs, medial care

Dynamic Cycle of Use of Scientific Knowledge ;

Issues → Data & info → Analysis → Design → Action → Evaluation →・・・



Ref. Prof. H.Yoshikawa

The 1st Chief Science Adviser to the Foreign Minister assigned on September 24, 2015. Professor & Dr. Teruo Kishi

……In May, a high-level committee convened by Japan's minister of foreign affairs released fifteen recommendations for how Japan could better incorporate its scientific and technological expertise into its foreign policy. ,,, including the establishment of the position of science adviser to the foreign minister,,,, by Vaughan C. Turekian, AAAS Science and Diplomacy, June 2015, Editorial

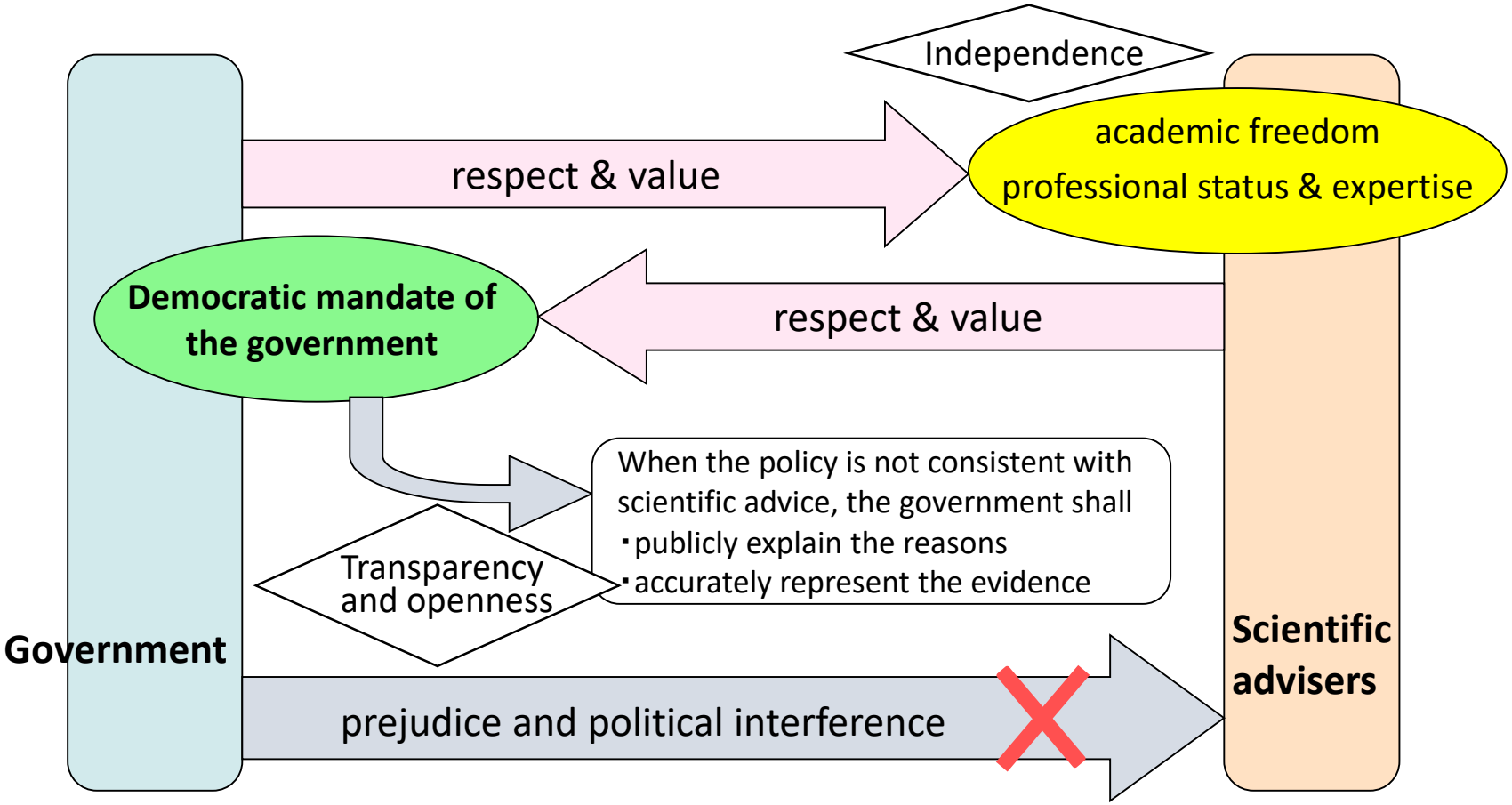
Conclusion

1. Recognizing many different and customized structures and processes for science advice in emergency to tackle local, real and complex situations.
2. Defining clear and commonized principles, frameworks and rules for advisory structures and processes in emergency.
3. Need mechanisms to coordinate science advice for ensuring appropriate, coherent and timely advice and actions in changing crisis situations nationally and transnationally.
4. Need to improve exchange of qualified data and information in trans-national crises.
5. Building regional and global networks for collecting diverse cases and experiences, and preparing a handbook on science advice in emergencies.
6. Building trust in science advice nationally, regionally and globally.
7. Providing science advice (science and policy interface) should be valued in academic and social reward systems as a new profession.

Thank you very much for your attention

Questions:
Tateo Arimoto, arimoto@jst.go.jp
http://www.jst.go.jp, http://www.grips.ac.jp

"Principles of Scientific Advice to Government", UK Department of Business, Innovation, and Skills (March 24, 2010).



" Scientific advisers should respect the democratic mandate of the Government to take decisions based on a wide range of factors and recognize that science is only part of the evidence that Government must consider in developing policy."

“LEITLINIEN POLITIKBERATUNG”,

by Berlin-Brandenburgische Akademie der Wissenschaften

”Wissenschaftliches Beratungswissen ist dabei nicht mit wissenschaftlichem Wissen gleichzusetzen. Es geht über dieses hinaus, da es sowohl wissenschaftlichen Standards genügen, als auch politisch wirksam sein muss.”

In English;

“Knowledge in scientific advise is not equated with scientific knowledge. It goes beyond that, since it must satisfy scientific standards, and at the same time be politically effective.”

Attachment No.1

Scientific Advice for policy-making

The role and responsibility of expert bodies and individual scientists

The OECD/GSF report (2015)

Developed by an Expert Group with workshops, survey and interviews

- **Overview of deliberative science advisory structures across countries**
- **Analysis of different phases of advisory processes**
- **Potential legal liability of advisors**
- **Specific challenges related to crises**
- **International coordination**
- **The role(s) of civil society**

A ‘check’ list for science advice

An effective and trustworthy science advisory process needs to:

a. **Have a clear remit, with defined roles and responsibilities for its actors**
b. **Involve the relevant actors – scientists, policy-makers and other stakeholders, as necessary**
c. **Produce advice that is sound, unbiased and legitimate**

a. Remit, roles and responsibilities

Need to be clear about:

- **Advisory versus decision-making roles**
- **Who communicates to public, when and how?**
- **Legal responsibilities and potential liabilities (which depend on structure remit, jurisdiction and behaviour)**
- **Necessary institutional support relative to remit**

b. Involving the relevant actors

- Include all relevant scientific disciplines
- Scientists and customer(s) jointly frame questions
- Transparent processes and procedures, e.g. for declaring conflicts of interest
- Effective procedures for international exchange/cooperation

c. Ensuring credibility & acceptability

- Based on best available science
- Assess and communicate uncertainties (probabilities)
- Independent of political (or other vested interest group) interests

Attachment No.2

SCIENCE ADVICE: INTERNATIONAL CO-OPERATION AND EXCHANGE OF DATA AND INFORMATION IN CRISIS SITUATIONS

Robin Grimes, Chief Science Advisor, UK FCO

Terms of Reference

Two main aims:

- To analyse national mechanisms for obtaining science advice in 'international' crisis situations.
- To explore the challenges and barriers to information and data sharing during 'international'crises.

Specific activities :

- A survey of (OECD member) countries to capture information on national responsibilities and processes for providing scientific and technical advice during crises.
- Building on the results of the survey, a workshop on information and data sharing during transnational crises.

Questionnaire survey

Issues explored:

1. mechanisms for science advice in crises
2. Centralised versus distributed advice systems for different situations
3. Quality assurance and accountability of advice
4. Public communication mechanisms
5. National advisory mechanisms linkage to international crises
6. Use of advice from overseas and/or international bodies
7. Challenges for accessing or sharing scientific data and information across borders

Beta test outcomes

- Single national contact points hard to identify. Many ministries, agencies and institutions are involved in science advice depending on the scale and nature of the crisis.
- Security and safety issues often considered differently

➢ Need to clarify focus on major 'international' crises (national crises with international implications or inherently international crises)

➢ Possibly focus primarily on natural disasters and health hazards

Workshop

- 7-8 September in UK
- Focus on exchange of data and information in crises
- Will build on survey analysis and interviews
- Analyse specific cases, e.g. Fukishima, Ebola, Zika
- 30-50 attendees, including providers and users of science advice in crises

Overview of initial project survey and analysis
Case 1: Zika virus epidemic in Brazil
Case 2: West African Ebola virus epidemic
Case 3: Great East Japan earthquake
Case 4: Eruption of Eyjafjallajökull volcano in Iceland
Case 5: River flooding

Hypothetical scenario: a major Space Weather event

Other players/partners

1. OECD-Gov High Level Risk Forum has a Network of Crisis managers, who might be one target for the survey.
2. International Group of Science Advisors (INGSA)
3. UN International Strategy for Disaster Risk UN-ISDR
4. APEC science advisors forum

(liaising with 2, 3, and 4)

Expected outcome

A policy report, including:

1. A compendium of national crisis response advisory mechanisms (and contact points)
2. A framework for the timely international exchange of scientific data and information

Attachment No.3

THIS WEEK

EDITORIALS

WORLD VIEW UN wants to ride the rising tide of international hydro-diplomacy **p.6**

SOCIAL SELECTION If you build a crowd on social media, the money for your research will come **go.nature.com/t5ytxr**

Time for the social sciences

Governments that want the natural sciences to deliver more for society need to show greater commitment towards the social sciences and humanities.

Physics, chemistry, biology and the environmental sciences can deliver wonderful solutions to some of the challenges facing individuals and societies, but whether those solutions will gain traction depends on factors beyond their discoverers' ken. That is sometimes true even when the researchers are aiming directly at the challenge. If social, economic and/or cultural factors are not included in the framing of the questions, a great deal of creativity can be wasted.

This message is not new. Yet it gets painfully learned over and over again, as funders and researchers hoping to make a difference to humanity watch projects fail to do so. This applies as much to business as to philanthropy (ask manufacturers of innovative crops).

All credit, therefore, to those who establish multidisciplinary projects — for example, towards enhancing access to food and water, in adaptation to climate change, or in tackling illness — and who integrate natural sciences, social sciences and humanities from the outset. The mutual framing of challenges is the surest way to overcome the conceptual diversities and gulfs that can make such collaborations a challenge.

All credit, too, to leading figures in policy who demonstrate their commitment to this multidimensional agenda. And all the more reason has been for such exercises to concentrate funding sharply towards the upper tiers of the rankings.

Most important in the current context is whether an over-dependence on funding formulae will undermine the nation's abilities to meet its future needs. A preliminary analysis by a policy magazine, *Research Fortnight*, reaches a pessimistic conclusion for those who believe that the social sciences are strategically important: given the REF results, the social sciences will gain a smaller slice of the pie than the size of the community might have suggested. If that reflects underperformance in social science at a national scale, and given the strategic importance of these disciplines, a national ambition in, for example, sociology, anthropology and psychology that reaches beyond the funding formula needs to be energized.

"If you want science to deliver for society, you need to support a capacity to understand that society."

A reader of the government's science and innovation strategy (go.nature.com/u5xbnx) might reach the same conclusion. Its fundamental message is to be welcomed: understandably focusing on enhanc-

“Transforming social science”; International Social Science Council

World Social Science Report 2013:
“Changing Global Environments” by ISSC

The *World Social Science Report 2013* issues an urgent call to action to the international social science community to collaborate more effectively with each other, with colleagues from other fields of science, and with the users of research to deliver **solutions-oriented knowledge** on today’s most pressing environmental problems. **It calls for a transformative social science that is bolder, better, bigger, different**:

- **bolder** in **reframing and reinterpreting** global environmental change as a social problem
- **better** at **infusing social science insights into real-world problem-solving**
- **bigger** in terms of having more social scientists to focus on global environmental change
- **different** in the way it thinks about and does research that helps meet the vexing sustainability challenges faced today.

ヨーロッパの新しい科学技術政策

Three priorities:

1. **Excellent science**
2. **Industrial leadership**
3. **Societal challenges**

“Vilnius Declaration” - The value and benefits of integrating Social Sciences and Humanities -

The European Union (EU) expects research and innovation to be the foundation for its future growth. Horizons 2020, an initiative running from 2014 to 2020 with a budget of a little more than €70 billion, is the EU’s new program for research and innovation and is part of the drive to create new growth and jobs in Europe. In September, a two-day conference was held in Vilnius, Lithuania, to address how socio-economic sciences and humanities can be incorporated into Horizons 2020. The result is the Vilnius Declaration on Horizons for **Social Sciences and Humanities** (SSH), September 24 2013.

The Declaration issues the following statements:

INTERNATIONAL COUNCIL FOR SCIENCE

ISSC
international social science council

29 July 2016

Dear Members,

ICSU and the ISSC are considering joining forces to create the foundation for a single, new international council for all the sciences. As a member, you will be essential to the success of this venture. Your vote will determine whether or not the two organizations merge. More importantly, your understanding of and commitment to the need for a merger will determine the success and longer-term impact of what we are poised to do. In the attached documents – entitled "Enabling and Advancing Science for the Future" and "Draft Planning Framework" – we set out our rationale for coming together, share our thinking about the future, and make concrete recommendations about the way forward.

Enabling and advancing science for the future

The world faces great challenges and society increasingly looks towards science to address them. This places demands on all fields of science in all parts of the world. It compels a global response, involving strengthened collaboration within the international scientific community and between it and the world of policy and business, civil society, and the public at large. A merger of the International Council for Science (ICSU) and the International Social Science Council (ISSC) is a critical part of that response.

Leadership in the international scientific landscape

The international landscape of science has become increasingly competitive and fragmented during the last two decades. In this environment, ISSC and ICSU are recognised for their work in stimulating collaboration between disciplines and countries in the creation and use of scientific knowledge, and providing pathways for its international political and social influence.

Many of these challenges cross physical-chemical, environmental, biological and medical, socio-economic, political and cultural domains and meeting them thus requires strong collaboration involving the full range of research disciplines. It also needs science to engage with a wide range of public and private stakeholders, including citizens, in the transdisciplinary creation of solutions-oriented knowledge for policy and practice.

The merged body will have enhanced competencies in:

- **Building a stronger foundation** for promoting all the disciplines and supporting science systems development in all regions of the world.
- **Addressing grand societal challenges** through a greater capacity to mobilize expertise across the disciplines and across different parts of the world.
- **Fostering genuine dialogue between science and society** by improving political awareness of scientific understanding of contemporary issues, raising scientists' awareness of international policy priorities,…….
- **Shaping policy for science across the globe** by promoting inter- and trans-disciplinary modes of…..by promoting and supporting exploitation of the novel opportunities that new knowledge and communications technologies offer.