OECD Risk Management:

STRATEGIC CRISIS MANAGEMENT

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Strategic Crisis Management

Charles Baubion

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Note by the OECD Secretariat

This work was conducted as part of the OECD High-Level Risk Forum, established in 2011 to offer a venue to achieve a shared and defined vision of integrated risk management, of which inter-agency crisis management is a core component. This report draws on the discussions held at the occasion of the workshop on Inter-Agency Crisis Management organised jointly organised by the OECD and the Swiss Federal Chancellery in Geneva, Switzerland on 28 June 2012. The workshop gathered 40 participants from 12 OECD countries, academia, the private sector and international organisations to discuss the challenges that they are confronted with in crises management. The agenda, summary and key presentations at the workshop can be found there:

www.oecd.org/gov/riskmanagement/oecdworkshoponinter-agencycrisismanagement.htm

The goal of this report is to:

- highlight the changing landscape of crisis,
- discuss and assess practices of crisis management,
- contribute to identifying good practice.

This report identifies five topics as key cross-cutting public governance issues that crisis management policies and practices should pay attention to: an overall crisis governance framework, the role of science and expertise, leadership issues, the governance of networks, and international cooperation. International exchange of experiences among governments and the development of common approaches is the aim of the High Level Risk Forum of the OECD. As developing principles on risk management is one of the Forum's objectives, these five areas could feed into the development of principles on crisis management.

The establishment of a network of crisis managers under the auspices of the OECD High-Level Risk Forum will further develop these exchanges of good practices. Developing a knowledge hub on crisis management and expanding its reflections to international co-operation to support crisis management are options for further work of this network.

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1. Introduction

Governments are confronted with an increasing number of crises, often consisting of new threats. They may spread beyond national borders and may create significant economic knock-on effects. The OECD report on *Future Global Shocks* (OECD, 2011) highlights the vulnerabilities of our interconnected, global economy. In the wake of the financial and fiscal crises, global leaders are acutely aware that further systemic shocks could severely challenge economic recovery, social cohesion and even political stability. Governments are always at the forefront of efforts to manage these disruptive events, and citizens' trust in government is directly affected by how swiftly and efficiently governments react in crisis situation.

The complexities of modern crises often require the involvement of many actors, above and beyond emergency services, and this demands effective co-ordination for a successful outcome. The need for co-ordination also raises significant public governance challenges, as crisis management functions are often exercised at sub-national levels, but co-ordinated at the centres of governments. The capacity to co-ordinate crisis management is a fundamental element of good governance, as it tests governments' capacity to provide the appropriate responses at the right time, in order to protect their citizens and businesses and mitigate the impact of disasters. Ensuring that national authorities have the right tools and institutional framework for co-ordinated action is critical.

Most OECD governments have taken these evolutions of the risk and crisis landscape into consideration, and crisis management systems have been reformed over the last decade, in order to adapt to this new context. However, crises continue to evolve, challenging even the most recent and robust systems.

This report highlights the changing landscape of crises with which governments are confronted today. How does this require governments to adapt their approaches, capacities and tools in various areas of crisis management towards more flexibility? The report discusses different approaches and practices in dealing with both traditional and novel crises, asking how best governments can adapt to change while still maintaining capabilities to deal with more classic crises.

2. New forms of crises are calling for new and innovative crisis management responses

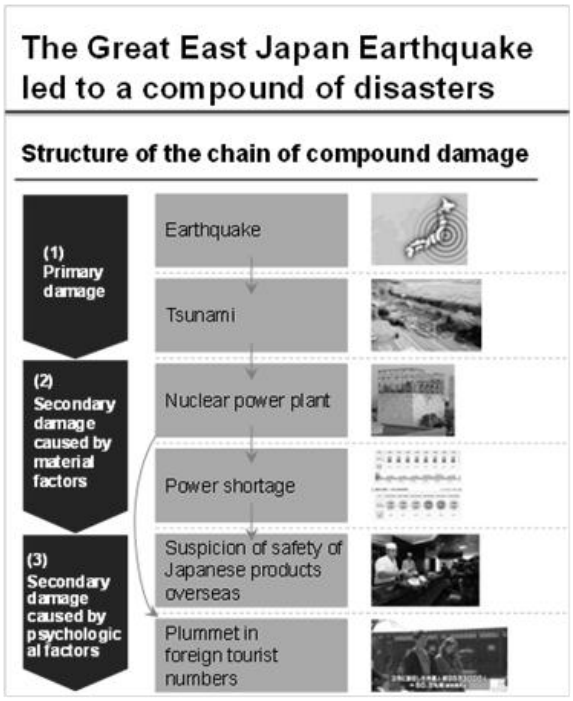
2.1 New nature of crisis

Recent crises have challenged political leadership and risk managers in many countries, often due to unexpected or unforeseen circumstances, but also due to weak links and breakdowns in information flow. Examples include the events of 11 September 2001, the SARS and H1N1 pandemic outbreaks in 2003 and 2009, the 2004 Indian Ocean tsunami, Hurricane Katrina in 2005, the 2010 Iceland volcanic eruption and its ash cloud over Europe or the 2011 Tohoku earthquake in eastern Japan, in which the tsunami and the Fukushima Daiichi nuclear accident resulted in cascade effects (Figure 1). In these cases, risk managers, processes and structures were unprepared to deal with

These new crises differ significantly from the past in several respects:

- their unexpectedly large scale,
- the fact that they are new or unprecedented – at least in human or crisis managers' memories – or their unusual combination (D. Leonard, 2012),
- their trans-boundary nature (Ansell, Boin, Keller, 2010). A trans-boundary crisis spreads across geographic borders (between nations, States or other local authorities) and/or policy boundaries (between administrations, sectors, public-private etc). These crises bring deep uncertainties and challenge government structures, playing up tensions between many stakeholders in the public and private sectors.

Figure 1. Cascading effects of the Great East Japan Earthquake



Source: Government of Japan

These trans-boundary effects can expand to become what OECD has characterised as a "global shock", that is, a "rapid onset event with severely disruptive consequences covering at least two continents" (OECD, 2011). This concept also takes into account another pattern of novel crisis: cascading risks that become active threats as they spread across global systems, whether these arise in health, climate, social or financial systems. A traditional crisis can become trans-boundary and even develop into a global shock at a later stage, through non-linear processes.

2.2 Increased vulnerabilities of modern societies

These various characterisations of a new crisis landscape reflect the idea that the 21st century is likely to witness increasingly damaging and costly shocks. Our societies are becoming not only more complex and interconnected, but also increasingly vulnerable and exposed, as new or different threats may emerge and spread more quickly through spill-over or amplifier effects.

Future Global Shocks (OECD, 2011) identified key macro drivers that augment vulnerability and amplify consequences of more classic crises. The heightened mobility within our global world facilitates the spread of risk carriers or vectors, such as viruses or terrorists. Globalisation has also led to an increased interdependence of production and delivery systems and their infrastructure as well as to the centralisation and concentration of critical systems. Supply chains and networks of vital services are more and more global and thus exposed to many hazards and threats. They are also vulnerable, interdependent and our societies and economies are increasingly relying on them for their daily functioning and operations. A crisis affecting one node of such a system might affect the whole, with large-scale cascading impacts. Urbanisation and the concentration of populations and assets further exacerbate societies' vulnerabilities by creating hot-spots for catastrophic events with a huge potential for direct losses, as well as by being attractive targets for terrorist attacks.

The characteristics of hazards and threats are changing as well. An increase in the frequency and severity of extreme weather events may accompany climate change, and rising sea-levels will endanger coastlines where most megacities are developing. New infectious diseases are appearing regularly and spreading more quickly with increased mobility of economic activities. Terrorism and other intentional acts are taking new forms as their agents are adapting their ways of operating within this new landscape.

2.3 Changing roles of governments and increased demand from citizens and the media

In addition to the emergence of new threats and vulnerabilities, elements to consider in the changing paradigm for crisis managers relate to the evolution of governments. While crisis management will always remain one of their fundamental roles, the wave of privatisation and decentralisation has reduced overall capacities in many governments to take direct actions to prevent or mitigate risks in sectors that are critical for the well-functioning of societies, such as utilities and infrastructure.

Crisis managers need to adapt their approaches to deal with a variety of different stakeholders that all have different interests, priorities, logics and values. Critical infrastructure in many OECD countries is largely operated by the private sector. Citizens also tend to organise themselves to respond to crisis through Civil Society and Non-Governmental Organisations (CSOs and NGOs), thus adding new players to the field who expect to be consulted during preparations and leveraged during operations.

In the meantime, government openness and transparency, constant scrutiny by the media and widespread dissemination of information on-line and through social media put governments and their decision-makers under constant pressure. This pressure is all the more acute when a crisis occurs: citizens' expectations are at the highest due to the emotional nature of a crisis. They demand more transparency,

responsibility and high standards of ethics from their governments, which need to react almost instantly or risk a political backlash amid criticism of unresponsiveness.

2.4 A changing landscape for risk managers

Together these trends paint a picture of global complexity that challenges risk managers, especially at the level of centres of governments. This changing landscape requires governments to adapt their processes, structures, tools and equipments to manage disruptive events of a new form. Today, risk managers are confronted with:

- dealing with the unknown,
- dealing with other administrative levels and/or other countries and / or international organisations,
- reduced capacities of central government due to decentralisation and/or privatisation,
- new actors with different agenda and approaches: the private sector, NGOs/CSOs,
- constant scrutiny from the media and citizens through social media,
- higher demands from and expectations of the citizens.

Meanwhile, governments need to maintain capacity to deal with more traditional crises as in the past. The innovations required to adapt to new features of crises and societies are not replacements for, but rather complements to, existing capacities, and can be built on them.

3. Managing crises remains at the core of government's roles in risk management

Disaster risk management has often focused on planning the organisation of emergency responses after disruptive events occur. Progress in science, technology and information management in recent decades has led to a better understanding of the exposures of the built environment to hazards and threats, and the vulnerabilities of populations, economic assets and environmental resources. This has enabled risk management to make better use of risk assessment for a more comprehensive and strategic approach, which also incorporates prevention policies and mitigation programmes to reduce exposure and vulnerability. The adoption of the Hyogo Framework for Action 2005-2015 (HFA) by 168 countries during the Second United Nations World Conference on Disaster Risk Reduction (held in 2005 in Kobe, Japan), emphasised the broadening scope of risk management from emergency response to encompass prevention and mitigation. Ultimately, what is referred to in many countries as the "risk management cycle" also includes early recovery and reconstruction as well as feedback mechanisms to incorporate lessons learned after a crisis or disaster.

The economic argument for governments to invest more in disaster risk prevention is that a net gain could be achieved, when compared to sums spent on recovery and reconstruction after a disaster. Long-term investments in prevention have shown in many cases to provide a significant positive return (World

Bank, 2011). These efforts to build and develop more robust societies and economies are fundamental, but emergencies continue to occur and crises are perhaps even more frequent. Countries that have invested heavily in prevention through the development of protective infrastructure, early-warning systems, regulations on land use and building codes still experience major disasters, which highlights the continued importance of crisis management capacities. The Great East Japan Earthquake in 2011 and Hurricane Sandy on the east coast of the United States in 2012 illustrate this point.

More recently, the policy research community working on government preparation for large scale risks has promoted the concept of resilience, derived from ecology and based on the notion of ecosystems (Beddington & Al., 1976). Applied to risk management, resilience is "the ability of a system, community or society exposed to hazards to resist, absorb, accommodate and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (UNISDR, 2009)". Resilience insists on continuity for all different kinds of systems and communities. Building the resilience of societies is consistent with investment in prevention and preparedness as well as with enhancing crisis management capacities. Promoting the concept of resilience is a powerful driver for self-organising risk and crisis management capacities at many different levels. The concept of business continuity epitomises the concept of resilience applied to a company or a service, including public services. Business continuity ensures businesses can continue to perform their core functions during crisis, even at a reduced scale, and recover as quickly as possible.

Governments have a crucial role to play in strengthening the resilience of their populations and critical infrastructure networks. While the promotion of the concept of resilient communities and systems at all levels can be addressed through regulation and is reflected in national policy frameworks in some countries, governments remain the ultimate warranty when capacities of resilience are disrupted at any level. In the eyes of the citizens, governments must provide robust leadership in crisis management and may be held accountable in the end if they do not. Governments can benefit from exchange of practice and experience to better deliver this fundamental role in an evolving context of trans-boundary risks. This is especially the case for countries that manage critical hubs of the global economy.

4. Crisis management: traditional approach vs. dealing with novelty

4.1 Crisis management frameworks and concepts

Crisis management comprises various phases: preparedness before crisis, response to limit damages during the crisis and feedback after the crisis.

Before a crisis, **preparedness** consists in developing knowledge and capacities in order to effectively anticipate, respond and recover from a crisis:

- *Risk assessment* constitutes the fundamental first step in preparedness: preparing for crisis requires identifying and analysing major threats, hazards and related vulnerabilities.

- *Early warning systems* based on the detection of these threats serve to activate *pre-defined emergency or contingency plans.*

- *Stockpiling, maintaining equipment and supplies, training and exercising* emergency response forces and *related co-ordination mechanisms* through regular drills all contribute toward preparedness.

- Appropriate *institutional structures*, clear *mandates* supported by comprehensive *policies and legislation* and the *allocation of resources* for all these capacities through regular budgets are also instrumental for thorough preparedness to crisis.

Once a crisis actually materialises, the **response phase** begins:

- *Detection* of a crisis may come about through various sources (e.g. monitoring networks and early-warning systems, public authorities, citizens, media, private sector, etc.). It may build up over time or happen suddenly.

- *Monitoring the development* of a crisis in order to make sense of its characteristics and ascertain the *operational picture* requires an appropriate intelligence organisation.

- This permits the selection of appropriate *contingency plans* and *activation* of appropriate emergency response networks.

- Response efforts need to be *co-ordinated, monitored* and *adapted* as the crisis develops through the tactical and strategic oversights of *crisis cells* at the appropriate levels.

- *Standard operating procedures* (SOPs) should govern operations and co-ordination and should include *information sharing and communication protocols* as well as *scaling-up mechanisms* to mobilise additional emergency response means.

- In addition to ensuring co-operation and exerting decision-making, leadership plays a key role in *crisis communication*. Communicating with the media and the general public to provide sense of events, to maintain trust in the emergency responders and government, and to transmit specific messages is an essential function of leaders during crisis.

Ultimately, a crisis usually comes to a closure, ending the crisis management phase. Bringing a crisis to closure requires clear messages. After a crisis, *feedback mechanisms* should review in detail the actions taken to limit damages. Drawing lessons from past crisis or disastrous events helps to improve preparedness and response processes.

This brief overview of crisis management concepts provides the basis to review how its various phases, processes and tools are challenged and need to adapt to the changing nature of crisis.

4.2 Crisis Preparedness: planning scenarios vs. preparing for the unknown

Preparing for crisis has traditionally consisted in developing capacities and tools to prepare for crises that occurred in the past. Preparing for the new landscape of crises requires adapting approaches that enable preparation for response to the unknown.

4.2.1 Risk assessment: sectoral analysis based on historical events vs. national risk assessment

Risk knowledge is the foundation of crisis and emergency preparedness. Analysing hazards, threats and vulnerabilities through risk assessment enables response planning. Risk assessment approaches and methodologies can hardly be decoupled from their purpose: while risk assessment for traditional crises

aims at developing emergency response plans, novel or trans-boundary crises need more flexible and adaptable capacities for responses, thus implying a more holistic and dynamic approach to risk assessment.

Traditionally, sectoral risk assessments were conducted for natural hazards, pandemics, industrial accidents or terrorist attacks, in order to identify at the local level the number of people who might require emergency support, the number of vaccine doses or hospitals beds required for pandemics, safe evacuation roads in case of a hurricane or a flood, or containment measures if a Nuclear, Biological, Radiological or Chemical (NBRC) attack were to diffuse chemical or radiological elements in a city or a network. Conducting such analysis requires combining information from technical agencies on the hazards and the threats as well as on the exposure of the population, settlements and critical infrastructures and their vulnerability. In addition, siloed approaches have long been predominant, with health services focusing on pandemics, meteorological services focusing on weather, hydrological services on water, geological services on earthquakes, and intelligence services on terrorism to name a few. Most of these analyses have tended to be based on historical events.

Hazard and threat information needs to be made available to local authorities and emergency services at the local level so that they can develop emergency plans. The availability of data and information to conduct risk assessments and mapping has been growing, along with the development of monitoring networks, databases and archives, as well as modelling and mapping tools. Institutional frameworks have helped to guarantee availability and sharing of such information down to the local level, as well as technical guidance to realise such assessments and mapping. Guidelines should provide details about what exactly local emergency services should prepare for, where available information is to be found, and point to agreed methodologies and standards. Ultimately, at the national level, this information can be usefully combined to develop national plans and additional supportive capacities for large-scale emergencies, but the use of the sectoral and scattered approach remains prominent. Efforts to further integrate risk assessment and mapping for emergency preparedness nevertheless exist through the use of new technologies and mapping tools. In Mexico, for instance, the System for the Analysis and Visualisation of Risk Scenarios (SAVER) is a multi-agency approach to map risks and develop scenarios for emergency response planning (Box 1).

Box 1. The System for the Analysis and Visualisation of Risk Scenarios in Mexico

Developed in 2010, the System for the Analysis and Visualisation of Risk Scenarios (SAVER) reflects the efforts of the civil protection authorities in Mexico to include risk scenarios information in emergency preparedness. The system integrates risk maps and geo-referenced information on vulnerability of hospitals, schools, public infrastructure and population vulnerability in one single database. Currently, its capacity to create risk scenarios is one of its most important characteristics. SAVER is the result of a horizontal and vertical co-ordination effort in the country. Ministries like the Ministry of Social Development, the Ministry of Communications and Transport and the Ministry of Public Education have provided valuable data and information on their infrastructure in order to feed the system´s database. Currently, the system comprises 700 hazard layers and socio-economical and vulnerability data. In 2011, the development of SAVER 2.0 increased its capacities, allowing parties to provide input to the database online. Public entities in charge of social, territorial and human development have been able to use the system for decision making. The system provides them with information on potential damages and what populations may be affected based on disasters´ occurrence records. In its next version, SAVER 3.0, the objective of the system is to integrate the totality of the 32 state risk maps.

Source : National Disaster Prevention Center of Mexico (CENAPRED)

Dealing with novelty and trans-boundary crisis calls for a more holistic approach to risk assessment at national level. Ideally such approach should address the following challenges:

- **Developing a broader and shared view on risks** at national level through a multi-hazard / multi-threat approach and including new and emerging potential threats and vulnerabilities

through frequent updates and a horizon time-scale. Tracking complexities, identifying potential cascading effects and tipping points should also be part of the analysis.

- **Sharing this risk assessment widely** to all different stakeholders that can be involved or play a role in emergency response (i.e. national to local emergency forces, health agencies, police and security forces, critical infrastructures operators, NGOs and volunteer organisations, media and the public at large, and at the international level with neighbouring countries).

Both these challenges require significant co-operation between different disciplines and stakeholders. Science, intelligence and expertise need to combine their data, information and knowledge to scope together emerging risks and threats as well as to provide all the information needed to conduct analysis. Additionally governmental agencies, local authorities, NGOs, the private sector and society at large need to digest the result of this risk assessment to integrate it into their preparedness strategies at all levels. An appropriate national authority has to lead such process to ensure co-ordination and co-operation through an integrative partnership.

More recently, a new national risk assessment approach has emerged to address these challenges and an increasing number of OECD countries are adopting it (Box 2). With the aim of developing national capabilities-based planning for emergency response in a resource-constrained environment, the idea of national risk assessment is to evaluate threats and risks at national level through a multi-hazard approach, with common criteria to assess potential impacts as well as likelihood of each identified risk. The result is a risk matrix, which supports the ranking of major risks and threats that could affect a country and helps with mobilising resources accordingly. The United Kingdom has been a pioneer in this area with its national risk register (an unclassified version of the National Risk Assessment) being publicly available since 2008. Norway, Switzerland, Canada, the United States and the Netherlands have adopted similar approaches, and France, Germany and Sweden are advanced in their efforts in the same direction.

Box 2. The Netherlands' National Risk Assessment

Since 2007, the Netherlands National Safety and Security Strategy has promoted a holistic approach to risk management. It has determined five vital areas for the country, which are territorial, physical, economic and ecological safety, and social and political stability. The main objective of the Netherlands National Risk Assessment (NRA) is to define priority risks for which the Netherlands should prepare and plan capacity development accordingly. The NRA consists of two parts: analysis and impact assessment The analysis part is managed by a network of independent experts who operate under the leadership of the steering committee of the National Security, composed of ministries, businesses and intelligence services. The NRA method is scenario-based. Risk scenarios are assigned scores for their likelihood and impacts according to 10 criteria related to vital safety and security interests. The results are given according to low and high estimates. The impact assessment permits the Netherlands to determine which capabilities are needed for each type of risk. In this way, high estimates contribute to the development of resilience capacities and preparedness. The NRA develops estimates for a five-year period. However, analyses and capabilities can be reassessed frequently by expert groups according to new information or a new context. A report on the risks is sent each year to the parliament. It is also published on official websites and sent to stakeholders. This NRA is then used to assess capacity gaps and identify where capabilities should be reinforced.

Source : Dutch Ministry of Security and Justice; Ministry of Interior and Kingdom Relations (2009), *Working with scenarios, risk assessment and capabilities in the National Safety and Security Strategy of the Netherlands*, Directorate-general for Public Safety and Security.

International co-operation in the area of risk assessment could be further developed in a variety of domains. Sharing methodologies and tools for risk assessment, developing a common view on cross-border risks, and ultimately developing common tools at the international level could increase the quality of risk assessment and potentially reduce costs. Detecting emerging risks requires significant efforts. Initiatives such as the World Economic Forum's annual *Global Risks* report or the risk radar developed through the European Emerging Risk Radar Initiative could be used to meet the specific needs of national authorities.

It should also be noted that in addition to crisis preparedness, risk assessment can inform other phases of the risk management cycle, including vulnerability reduction through long-term territorial management, infrastructures and other policies, as well as disaster risk financing strategies. As such, it can constitute a fundamental tool to harmonise risk management policies and practices across its various components with an overall coherent vision on what the priorities are.

4.2.2. Emergency planning: scenario-based vs. capability-based and network building

Emergency planning is directly linked to risk assessment. Once risks have been identified, resources can be allocated to develop emergency response capacities and emergency plans can be developed to utilise these to respond to pre-defined scenarios.

In most countries, emergency response capacities are spread across several agencies from the local to the national level. Disaster risk management agencies, civil protection, health services, fire-fighting units, police forces, armed forces and transportation, electricity and communication operators' emergency units can contribute capabilities to emergency response depending on the nature of the crisis and their institutional structures and mandate. The aim of emergency planning is to ensure that these various organisations possess sufficient capacities (emergency centres, human resources, equipment and supplies) throughout the national territory to respond to emergencies identified in the risk assessment process. The trade-off between having highly specialised expert centres or ensuring proximity of response services wherever an event might occur has to be addressed in this process. Ranking risks through the national risk assessment (NRA) facilitates resource allocation from the national governments to prepare for the priority risks and related scenarios established in the NRA.

Box 3. Plan SISMO in Mexico, a good example of scenario-based emergency planning

An 8.0 to 9.0 magnitude earthquake in the Guerrero gap is considered the most important threat in Mexico as it could severely damage Mexico City as well as generate a strong tsunami. For this reason, a special civil protection programme for earthquakes was established by the Ministry of the Interior with a specific committee on earthquake emergency preparedness regrouping all the key stakeholders, the Army, the Navy, the state civil protection departments, academic and civil society organisations. A plan entitled "Strategy for preparedness and response of the Federal Administration to a high-magnitude earthquake and tsunami" (the "Plan Sismo") was published by the Ministry of the Interior in 2011. Plan Sismo represents a major attempt to define more clearly what each agency should do in the case of a major earthquake. Plan Sismo consists of four directives decided by the President, instructing and ordering Federal agencies to support the population to preserve the Rule of Law and the governability of the country. The plan foresees procedures that run counter the normal practice. For example, the President would order the Army and Navy to activate their respective measures; the DN III Plan and the Plan Marina. States and municipalities are called on to activate their civil protection councils and co-ordinate with the Federal level. Organised in relation to three response areas (operational, logistics, and administrative), 14 working groups are defined with their co-ordinating agencies and their members. This plan represents the first comprehensive emergency plan with clear co-ordination mechanisms. While with Plan Sismo, Mexico City is far more prepared now for a major earthquake than it was in 1985 when two tremors led to massive damages and fatalities, whether such the plan would really be sufficient and effective in case of a major disaster remains open to question.

Source : Ministry of the Interior of Mexico (SEGOB)

Once emergency response capacities have been established, operational plans should be developed to mobilise these when a crisis occurs. Contingency or emergency plans can take many different forms: plans for organisations, for specific vulnerable locations (schools, hospitals, tunnels, industries); for specific disaster events (floods, bioterrorist attack, earthquake) (Box 3); or plans per administrative unit (city, local authority, region, state). Most of these plans are usually scenario-based and include a series of SOPs that are automatically applied when a disaster strikes. The chain of command is described and responsibilities are defined, as are the communication protocols, and the organisation and functioning of crisis cells. Increasingly, co-ordination mechanisms between different stakeholders, and scaling-up procedures in case

a crisis develops beyond the coping capacities of a certain level, tend to be included in contingency planning. However, most plans are based on the pattern of a classic command and control system from top to bottom.

All these capacities and planning assumptions constitute an essential element of crisis preparedness, both for classic crises and more uncommon events. But 21st century crises often challenge this pre-defined planning and organisation. Classic preparedness leads to established routine and a reduced capacity to "think outside the box". Dealing with novelty requires another level of preparedness. Capacities to deal with a predefined scenario are insufficient; capabilities to deal with any kind of unprecedented and large-scale event are required.

As they are often unprecedented, novel crises cannot be tackled with a comprehensive and executable plan, since this does not exist. Emergency responders need to be able to improvise and innovate. Developing capacities to adapt to and innovate in various crisis environments and building a response network that can mobilise all the required capacities across a variety of stakeholders thus becomes a new approach in emergency preparedness and planning.

With a novel crisis, many different stakeholders are involved in the response, since many different sectors may be affected and different capacities may have to be mobilised. In this context, the ability to effectively co-ordinate their actions and steer the whole response system with shared information and clear objectives make the difference. Inter-agency co-ordination mechanisms and scaling-up procedures across levels of government and jurisdictions need to be very effective and flexible at the same time. The key to prepare a for trans-boundary crisis lies in the capacity to organise a common response towards shared objectives using all necessary capacities from different organisations with different logics and practices toward solving the crisis. Strong strategic leadership is fundamental, as is a common set of principles and values across the network to ensure that its various capabilities/capacities are mobilised to apply shared goals, objectives and priorities in a time of crisis even though their fundamental logic may differ (Box 4).

Box 4. Sharing common values all along a diversified response network

The French White Paper on Defense and National Security (2008), the Netherlands NRA and the United States National Response Framework have all set up objectives and common values to be shared along an extensive inter-agency response network.

The French White Paper of Defense and National Security underlined the importance of new technologies and efficient communication providing that management planning has to strengthen communication as an operational dimension of emergency response. It promoted the creation of a crisis inter-ministries network to facilitate joint management and inter-operability. In this spirit, the Netherlands also adopted a bottom-up, whole-of-government process underlining interconnections between risks and promoting security on the agenda of public and private actors. For instance, regarding prevention, a common spirit among diverse actors can be found in boards such as the Cyber Security Board, which considers different perspectives (government, business, science) in providing the government with independent advice. Finally, the US approach favours various scales of response through close collaboration with the private and non-profit sectors. This whole community approach enables the development of relationships and an opportunity to learn about the complexity of the community to reveal inter-dependencies. The final developed scheme is a diversified response network that is flexible and adaptable under a unified command system and shared common strategies.

Source : Ministry of Security and Justice, the Netherlands ; Ministry of Interior and Kingdom Relations (2009), Working with scenarios, risk assessment and capabilities in the National Safety and Security Strategy of the Netherlands, Directorate-general for Public Safety and Security; Présidence la République Française and Mallet, JC, (2008), Défense et Sécurité Nationale : le Livre Blanc, Editions Odile Jacob and La Documentation Française, Paris ; US Department of Homeland Security (2011), Risk Management Fundamentals, Homeland Security Risk Management Doctrine, US Department of Homeland Security, Washington.

Emergency planning consists in building an inter-agency response network based on shared values; developing and training leaders / co-ordinators able to co-ordinate and manage this network and innovate in their approach; and creating common tools including crisis cells, integrated command centres and communication and information exchange systems. In addition, specific emergency units can be specifically trained to innovate, and flexibility can be introduced in the response network out of a strict hierarchical control in order to strengthen resilience of the response. Breaking the chain of command can sometimes indeed facilitate a better response. Ultimately, in addition to inter-agency co-operation, international trans-boundary co-operation mechanisms can be designed to deal with cross-border and international crises.

4.2.3. Training: testing plans and procedures vs. strategic exercises and networks building

Exercising and training constitutes a key task to prepare for a crisis. Most emergency response agencies have dedicated structures for constant training of their staff. In many emergency response units, training exercises is an important daily activity.

Training and exercising for crisis preparedness can have different purposes: training units and individuals; testing equipment and the ability of staff to deploy and use it; controlling stocks of supplies; and testing all components of contingency plans from the knowledge of the detailed protocols and procedures by the staff to the plan itself. Tabletop or large-scale exercises can be organised to test a specific response plan as well as its related co-ordination mechanisms. Feedback from training can then be used to improve planning.

As novel crises do not have pre-defined plans, the concept and purposes of training for them are different. The two key functions of modern crisis response – leadership and network co-ordination – require specific training. Strategic crisis management training is meant to test leadership and develop this capacity among a roster of civil servants who could be deployed when crises occur. Such training does not test the knowledge of protocols or protocols themselves but rather the ability to innovate in a stressful environment and when "the fear factor" is present. Such strategic crisis management exercises require in-depth preparation to provide a sense of reality and focus mainly on the human elements (Box 5).

Strategic management training needs to be complemented by trainings and exercises dedicated to inter-agency co-operation and large network management and interaction. Planning for novel crises will require stakeholders from different backgrounds and structures to work together. While managing this wide response network from a strategic perspective is essential, the network itself must be trained to learn how to interact. Table-top exercises among strategic crisis managers of different agencies, including large private sector organisations where interactions at different levels are needed, may help build familiarity and trust within the network. Trust, based on understanding each other's capacities and approaches, can only be built through regular interactions. Regular training helps networks to become more efficient as exchanges and relationships grow.

While feedback from training for classic crises usually serves to improve the plan or the procedures, feedback here is mostly on better understanding other's functions, learning to define common priorities against a set of shared values, and testing flexibility and the capacity to innovate. The idea is not to test the structures but rather people and their capacities to design, lead and function in a new response organisation adapted to the current threat.

Box 5. Strategic Crisis Management Exercises: examples from Germany and Switzerland

In recent years, Germany and Switzerland have conducted comprehensive strategic crisis management exercises that test co-ordination, resilience, response capacities and operational continuity management in crisis situations. These national exercises follow an inter-agency and cross-disciplinary approach. They involve participants from all sectors and political levels, who engage in plausible, risk scenarios whose consequences could significantly harm the country. The exercises also focus on crisis information and communication and aim to attract media interest to foster awareness-raising. One of the essential benefits of these exercises comes from the post-exercise phase. Evaluation reports, based on expert observers' and participants' assessments, enable the identification of capabilities that need to be strengthened and contribute to further development or shifts in crisis management strategies and structures. Germany established the National Strategic Crisis Management Exercise (LUKEK), which takes place every two years, with the aim of raising awareness in top government officials. The LUKEK offers training for cross-ministerial management and crisis response staff and includes the participation of political authorities, relief organisations, scientific institutions, critical infrastructure operators and key service providers. The entire cycle of the strategic exercise lasts 16-18 months. The exercise is intended to be as complete as possible comprising tabletop activities to introduce the scenario to the operational staff in their normal working environment, and real-situation simulations.

Following the 1993 "Regio-Kat" exercise related to earthquake crisis management, Switzerland developed the RHEINTAL 06 project, with the aim of checking progress against, and compliance with, the 1993 exercise's recommendations. This process of simulation exercises will be repeated every five to seven years. The SEISMO 12 exercise of May 2012 was based on the potential occurrence of a 6.5 to 7 magnitude earthquake in the Basel region. 1,600 people participated in this trans-boundary exercise, which was developed at international level between Swiss authorities and German administration units. The crisis scenario included the need to prepare for cascading effects such as a nuclear accident. In 2009, the evaluation report of a similar exercise organised on "long-term power failure" led the Swiss Federal Office for the Country Economic Supply to re-examine emergency planning related to general power failure.

Source : Swiss Federal Chancellery (2009), Exercice de conduite stratégique – ECS 2009 ; German Federal Office of Civil Protection and Disaster Assistance (2011), Guideline for Strategic Crisis Management Exercises

4.2.4 Activation: Early Warning Systems triggering emergency plans vs. strategic foresight

Early Warning Systems (EWS) have been instrumental in reducing loss of life and damage caused by natural hazards and other threats (WMO, 2012). Through the detection of potential risks and the information of emergency services and the population at risks, EWS allows emergency measures and plans to be activated.

Box 6. Integrated Early Warning System in Korea

Korea has adopted an integrated risk-management approach that reflects in the country's early warning systems (EWS). These EWS monitor information pertaining to potential natural, man-made and social disasters. This is captured in the Integrated Situation Center (ISC), which includes four sub-systems to monitor and disseminate information before and during a crisis. Through the Disaster Prevention and Meteorological Information System, the ISC monitors satellite images, radar images and the contents of special weather reports. Specific monitoring systems are also established for floods, rainfalls, tsunamis, earthquakes and highway accidents (CCTV real-time monitoring). In the event of a threat, alerts are sent out though the Internet to the report centre and through a Cellphonel Broadcasting Sservice (CBS) that sends a message to citizens' cell-phones to inform them about evacuation measures. In the event of an emergency, the ISC acts as a disaster management control tower to support response measures in a 10-minute maximum lapse-time. Using the Disaster Information Sharing System, which connects 34 organisations, it proceeds to real-time disaster information collection. It also brings together information from affiliated organisations, national and local authorities, civil protection entities, the media and affected citizens. Finally, the Disaster Management Information Data Base Center provides information on the damage status while the Central Disaster Management System provides information to manage facilities, refugees and assess damage situation.

Source : presentation by the Korean Ministry of Public Administration and Security, OECD Workshop on Inter-Agency Crisis Management (2012).

Scientific and technological progress, and better linkages between technical and risk management agencies, have strengthened many countries' capacities to forecast, warn, and activate emergency plans. Tropical cyclones' tracks are forecasted with a 5-day lead-time in all cyclonic basins. Floods, storms, heat waves and cold waves, and other hydro-meteorological hazards are monitored and forecasted through hydro-meteorological services. Daily worldwide exchange of information among these national services is ensured through the tools and frameworks of the World Meteorological Organisation. In the case of earthquakes, few systems can warn people in advance of the arrival of seismic waves when the vulnerable hot spots are located several kilometres from the active faults (Mexico City and the SAS, for instance, or Japan). These few seconds of warnings can be sufficient to save lives and shut down critical industries and infrastructure that would be more heavily damaged if they continued running when disaster strikes. A global system for epidemiologic data and information monitoring is also ensured through the co-ordinated network of the World Health Organisation to detect potential pandemics. Some pioneering efforts are also underway to create EWSs for ethnic and international conflicts, as well as for the risk of terrorism, where an increased level of threat as determined by intelligence service information may lead to better warning.

The integration of all this information into multi-hazard EWSs can be a key tool for government to prepare for a crisis, activating plans or elevating warning levels for a certain threat (Box 6). However, the non-linear dynamics and complexity of modern crises make them more difficult to detect. While EWSs are by definition systems meant to observe specific parameters and warn when these are exceeding certain thresholds, thereby leading to pre-defined actions, the detection of novel crises presents new challenges.

New strategic foresight capacities should be developed for governments to be able to detect early signs and better anticipate uncommon crises. Horizon-scanning or risk radars tools need to be designed with a wide scope to detect weak signals that could potentially turn into a crisis. As for risk assessment processes, expertise from different disciplines must be mobilised. The overall idea is to suggest an intelligence network that can detect emerging crisis factors (Box 7). In this respect, it is critical to develop capacities to "think outside the box" and come up with innovative scenarios that might occur. Using crowd-sourced information to monitor social networks can also offer early information before crises develop. But whatever these new tools are, the results will have to be convincing, both in terms of the extent of the detected threat and that certain preparedness measures should be implemented. EWS only demonstrate their efficiency when they are linked to emergency preparedness and response.

Box 7. Measuring geopolitical tensions based on market forces

In 2003, the US Senate demanded that the Defense Department abandon the Defense Advanced Research Projects Agency (DARPA)'s project it had developed on Futures Markets Applied to Prediction (Future MAP). Following a similar model as existing betting markets, which have proven to be accurate in predicting presidential election outcomes, the Future MAP project was aimed at forecasting Middle East geopolitical tensions and political events, , according to the assumption that financial markets combine the collective wisdom of investors. This policy analysis market was to involve investors betting small amounts of money that a particular event, such as terrorist attacks, assassinations or coups, that would take place in the Middle East. Experts were to place bets on political and economic events. It was to begin with a limited 100 traders coming from Middle-East universities and think tanks who would get $100 each to buy and sell futures contracts based on plausible events in eight countries of the region. The themes of the bets would mostly relate to military preparedness, civil stability, economic health, U.S. military involvement and U.S. economic investment. Denounced as a gamble on fictional scenarios of terrorism and as an economic waste, the Pentagon agreed to abandon the project.

Source : MSNBC news, *Pentagon kills 'terror futures market'*, July 29th 2003

4.3 Response: Command and Control vs. adaptative capacities

When the threat is clearly forecasted, or when the crisis is actually present, the real response phase starts.

4.3.1 Operational picture: Crisis development monitoring vs. sense-making

Getting a clear operational picture of the development of the crisis is the basis for decision-making both at operational and strategic levels. What happened, how many people are or might be affected, what are the issues at stake, how might the crisis develop, what are the means in the operational field are a series of question that leadership needs for taking decisions. Harmonised monitoring systems, situation reports from all active operational entities should be gathered at the centre to inform the crisis cell. Information and communication systems, as well as standard reporting protocols among the emergency response network, enable easier analysis and the sharing of situation awareness (Box 8).

Box 8. United States Incident Command System

Since the 1970s, in order to manage and organise emergency response, the United States has developed an Incident Command Systems (ICS) in various institutions. This scheme was reshaped in 2005, in the frame of the National Incident Management System (NIMS), to settle common competencies and behaviours for emergency management. The current ICS consists in a standardised emergency management structure implemented in Federal, State, tribal, and local governments, NGOs and the private sector to respond to demands arising from a crisis situation, regardless of jurisdictional and political boundaries. Aimed at fostering interoperability and inter-agency cooperation, the ICS provides schemes for 14 management characteristics related to incident command, operations, communication, planning, logistics, finance and administration, and intelligence and investigation. Management objectives and action planning are centralised in a single unity of command to prevent diverging orders and promote accountability to a unified command and reporting institution. In this way agencies are able to respond to emergencies in a cost-effective and co-ordinated way that permits the development of mutual objectives and strategies. At the same time, the ICS is flexible enough to be implemented for all kind of incidents, small or large. To ensure communication, the system has developed a common inter-agency terminology. Moreover, information exchange is achieved thanks to Public Information Officers who are in permanent contact with the Incident Command Organisation and the Safety Officer. In order to promote an inter-disciplinary approach, training and specific guidelines on ICS are provided to agencies such as the Food and Drug Administration, healthcare providers and hospitals as well as institutions of higher education.

Source : National Incident Management System (2008), Department of Homeland Security

Novel crises again are challenging classic situation monitoring. When a crisis is unprecedented, there is first a need to make sense of what is going on, and technical or scientific expertise is often needed to understand complex situations. Pools or rosters of national experts from different disciplines and organisations can be organised in advance so that expertise can be mobilised effectively and quickly to inform crisis management (Box 9). Trust in expert advice has to be built over time and, on the expert's side, clarity regarding the liability attached to their advice is essential.

Box 9. UK Science Advisory Group in Emergencies (SAGE)

Effective emergency management relies on decision-makers having access to the best available advice in a timely fashion to ensure that the full range of issues and the crisis dynamics are considered. In this way, the United Kingdom has settled the SAGE, which independently advises the Cabinet Office when an unprecedented crisis requires expert views. The SAGE convenes in situations that require cross-government co-ordination, notably when the Cabinet Office, in consultation with the Prime Minister, decides to activate the Cabinet Office Briefing Room (COBR). The SAGE convenes to provide scientific and technical advice on the way the emergency might develop, on potential scenarios and their impacts. The advisory group is both flexible and scalable as its tasks adapt to the nature of the incident and evolve as the emergency unfolds. Under the authority of the Government Chief Scientific Advisor, SAGE includes experts from all sectors and disciplines to analyse data, to assess existing research, or to commission new research. It can create sub-groups or liaise with devolved institutions or scientific groups and, in complex emergencies, it can have access to intelligence service information. To inform UK cross-government decision-making during the emergency response and the recovery phases, the SAGE submits policy option papers which outline scientific and technical solutions and their pros and cons and response scenario papers. At all stages, SAGE representatives attend the COBR to explain scientific issues. The SAGE was activated during the 2009 H1N1 influenza pandemic, the 2010 volcanic ash cloud and the 2011 Fukushima nuclear incident. It deactivates once there is no longer a need for cross-government decisions on emergency response or recovery. An evaluation process is then triggered to review the SAGE's performance and identify lessons for the next crisis.

Source : United Kingdom Cabinet Office, Civil Contingencies Secretariat, London

4.3.2 Response: Standard Operating Procedures vs. managing large response network

Rapid, sustainable and properly scaled deployment of emergency forces, means and supplies is expected in the crisis response phase. In many countries, emergency response is based on the principle of subsidiarity: first responders are from the local level, and they will ask for support from higher levels of governments/organisations when their coping capacities are exceeded by the scale of a crisis. SOPs govern the operations of most of the entities involved in emergency response.

Trans-boundary crises require strategic engagement from centres of government at the earliest. While scaling-up procedures are often designed to respect the institutional setting and the mandate of local jurisdictions, other mechanisms should be settled to allow the rapid involvement of higher-level authorities when a threat is detected or a crisis is forecasted. Indeed, as already described, managing a large response network of stakeholders from different backgrounds and values, requires highly professionalised emergency management leaders with sufficient authority and yet the adaptability to use the strengths of the various responders in a co-ordinated network. Trade-offs between emergency response at the local level and strategic engagement at the national level should be clearly addressed through clear institutional and legal frameworks.

Decisions often have to be made as the crisis develops, even when consequences are not always thoroughly weighed. Processes to facilitate difficult decision-making when various factors remain unknown, have to be established. For instance, crisis rooms should be designed with emergency decision-making processes in mind. Developing a consensus among the various stakeholders present in a situation room requires that information is shared with full transparency between them. as well as common values among them (Box 10).

Box 10. Italy Civil Protection Operational Committee at national level with all stakeholders

The Operational Committee (OC) of the Italian Department of Civil Protection (DCP) illustrates an organisational approach to create consensus among different stakeholders. This consensus ensures, at a national level, the joint management and co-ordination of emergency activities. It is composed of representatives from operative structures of the national civil protection agencies and, notably, from the DCP, the armed forces, the fire department, police forces, the Italian Red Cross, the National Health Service, voluntary organisations and technical and scientific agencies. The Committee ensures inter-governmental co-ordination for decision making, comprising civil protection representatives from regions and municipalities but also critical infrastructure providers.

Chaired by the Head of the DCP, it is convened by the Head of the DCP whenever he or she deems it necessary. It gathers in the DCP premises, in the National Operational Room, which converts into a crisis cell in case of an emergency. The room is equipped with technical and communication systems to provide assistance for meetings; it is designed to keep pertinent information online and to provide an integrated picture of unfolding events through monitoring surveillance. In this way, the Committee can receive, collect, process and verify information. It is responsible for assessing requests from areas affected by an emergency in order to define intervention strategies, to guarantee the co-ordinated deployment of resources, and determine the intervention of emergency response participants. The Committee also disseminates emergency information with the objective of alerting immediately and activating the different structures of the National Civil Protection Service. Depending on the situation, connections can also be established through a secure system with the affected regions or with entities responsible for critical infrastructures, notably with the civil protection operational rooms of regional provinces or municipalities.

Source : Italian Civil Protection

Central governments need to be able to scale-up emergency response capability since the extent of trans-boundary crises is often broader than initially expected. Mutual-aid agreements can be developed in many sectors, enabling utility companies, city fire-fighting units and police forces to be deployed across neighbouring regions. Additional national emergency forces can also be specifically trained by the national government to provide "surge" capacities. Effective cooperation depends on interoperability of equipment resources that agencies use in emergency response.

The role of civil society is growing as part of the new environment of crisis management. Citizens, volunteer organisations, and national and international NGOs should be included in the response system. Properly articulating their roles and functions with other emergency response actors is fundamental. These efforts from the civil society must be appropriately considered and supported especially in time of crisis to support an open and transparent approach to crisis management. The only major concern to be specifically looked at with respect to their engagement is the personal safety and security of the personnel and citizens involved in these actions.

4.3.3 Leadership: crisis communication vs. meaning-making

In addition to ensuring co-ordination of the emergency response network, leadership plays a major role in crisis communication. During a crisis, the emotions of the population are usually running very high, and leadership must convey messages that answer their expectations. It is also essential to disseminate some important messages to the public at risk for its own safety, and this requires appropriate crisis communication techniques and tools.

Traditional crisis communication consists in communicating messages on the status of a crisis, its impacts, the actions and measures that have been mobilised. It is usually meant to feed the media with facts and to demonstrate citizens that the government is managing the incident as well as possible. Political leaders are often called upon to intervene in front of the media to play this role and therefore require specialised trainings.

In the age of social media, where information is communicated widely from a large number of sources and both key information and false rumours are disseminated, crisis managers need to take social media information on board and also use these modern tools to share information and communicate. Dedicated social media response teams can be very useful for sharing crisis information with citizens. Meanwhile, traditional ways of communication should not be abandoned, as crises can damage telecommunication networks and thereby disrupt access to many social media platforms.

When a crisis reaches such severity that trust in the government is severely challenged, crisis communication enters into a new phase, where leadership is critical. When citizens' expectations are at their highest, leaders need to find the right words to provide meaning to what is happening. This "meaning-making" function of leadership refers to the capacity to provide not only information, but a narrative that responds to public expectations. Reducing public and political uncertainty is fundamental to enhancing crisis management. Behind this storyline, the objective is to convince the public that they should trust the government at a very critical moment, one in which the level of trust may have significantly declined. Finding the right wording or the capacity of "persuasion" sometimes requires taking a step back from the event to tailor key messages that focus on the values of society. Setting a few officials aside can be a useful tactic in crisis cells to protect them from the heat of the events and from the media's demands for immediate information.

4.3.4 End of crisis: improving crisis response vs. rebuilding trust

As a crisis winds down, officials should clearly indicate closure to the public through a formal, well-communicated process to help alleviate continuing anxiety and encourage the return to a state of normality. This also helps entry into the next phase of risk management, such as the reconstruction process, with a new mindset. The role of political leadership and co-ordination is crucial. While the end of a classic or routine crisis may be clear with emergency services reducing their mobilisation or warning levels, a trans-boundary crisis may be more difficult to end and could flare up if different government authorities sent inconsistent messages.

Large-scale crises with severe damages can have a critical impact on people's trust in the government. The level of trust can be undermined because the government did not take the right decisions or did not appear to make its best effort to deal with the crisis. It can even be worse when people have the feeling that the government did not have a transparent and open approach, or that they were hiding either important aspects of the crisis or the failure of their approach. Clarifying how decisions were made and showing clear government accountability are the best ways of avoiding having the post-disaster phase turn into a looming political crisis, which would further diminish levels of trust.

After the crisis comes the time for in-depth analysis to review what has happened and how response actions were conducted. It is important to conduct this feedback process at the levels of each response institution as well as at the inter-agency and strategic level.

5. Identifying key cross-cutting issues in inter-agency crisis management

Table 1 summarises all the key differences between traditional crisis management and how to deal with novel crises. While governments need to adapt their crisis management capacities to the characteristics of novel crises, developing new doctrines and tools, they are also required to continue being able to deal with more classic crises, where robust execution is a must.

Table 1. Different approaches in crisis management: traditional crises vs. dealing with novelty

Traditional crisis management	Dealing with novelty
PREPAREDNESS PHASE	
• Risk assessment based on historical events • Scenario based emergency planning • Training to test plans and procedures • Early Warning Systems based on monitoring, forecasting, warning messages, communication and link with emergency response	• Risk assessment includes horizon scanning, risk radars and forward looking analysis to detect emerging threats. Frequent updates and different time-scales, international analysis sharing, multi-disciplinary approaches are key attributes • Capability-based planning and network building • Strategic crisis management training to learn agility and adaptability and create networks and partnerships • Strategic engagement from centres of government
RESPONSE PHASE	
• Command and control system • Standard Operating Procedures • Strict lines of responsibilities • Sectoral approaches • Principle of subsidiarity • Feedback to improve SOPs	• Crisis identification / monitoring: role of expertise • Flexible and multi-purpose crisis management teams and facilities • Common concepts across agencies to inform leadership with high adaptative capacities • Similar tools and protocols that could be utilised for multi-crisis • International co-operation • Management of large-response networks • Ending crisis and restoring trust • Feedback

Each government, depending on its institutional structure, history, and exposure to hazards and threats has developed specific institutional and governance mechanisms to support emergency and crisis management. The complexity of novel crises and the increased inter-connectiveness of our societies require government to adapt its roles and capacities to meet expectations of citizens. To this end, the following actions should be considered:

- **The national crisis governance framework should be set up to ensure appropriate structures and institutional frameworks able to deal with both classic crises and unprecedented ones are in place.** The framework needs to be able to deal with trade-offs attached to these two approaches: preparing for classic crisis through standard operating procedures and pre-defined plans and developing adaptable and flexible capacities for new crisis (preparing for the unknown and attracting public finance to do so). Such a national framework

should define the key values for all stakeholders engaged in crisis management and should also refer to boundary-spanning mechanisms for the crisis response. Up-scaling mechanisms are particularly crucial.

- **Multi-disciplinary expertise should be organised for sense-making before and during crises.** Multi-disciplinary expertise should be mobilised to prepare and respond to crisis. Long-term risk assessment and horizon scanning, the development and operations of monitoring and Early Warning systems, as the sense-making of an unexpected crisis, all require a variety of expertise from different disciplines. Expertise must sometimes be mobilised very quickly when a crisis happens. Trust and accountability related to expert advice especially in a time of crisis is of an upmost importance.

- **Leadership during a crisis is fundamental for restoring public trust and requires developing professionalism through specialised trainings.** Sense-making, decision-making in the crisis cells, meaning-making and crisis communication directed toward the emergency response network and citizens are key leadership functions requiring the appropriate tools, skills and training. Clarity regarding the respective leadership roles of professional risk managers and political leaders facilitate crisis management.

- **The ability to manage large multi-stakeholders and multi-form public/private/NGOs response networks is a new capability that central government should invest in to strengthen crisis responses**. Building, training, maintaining and managing a large inter-agency response network, involving private sector and civil society / volunteer organisations requires capacity to mobilise widely all these stakeholders along common values and objectives. Regular trainings, common tools and efficient communication mechanisms enable the network to function during crisis.

- **International co-operation and partnerships can support many functions of crisis management and should be further strengthened**. In addition to exchanging good practices and / or defining common standards for inter-agency crisis management, international and regional co-operation could help national crisis management in many ways. Areas for cooperation include: global monitoring systems, shared risk radars or early warning systems, the interoperability of emergency forces, the availability of specialised teams capacities, tools and supplies at transnational levels, the interconnection of strategic crisis management structures, and harmonised crisis communication processes. Cooperation in these areas can both enhance responses and achieve cost savings (Box 11).

Box 11. International co-operation frameworks supporting crisis management

Many international co-operation frameworks exist, such as:

- **Risk assessment, risk radar tools**: Initiatives such as the UN Global Assessment Report, the World Economic Forum Global Risks Report or the risk radar developed through the European Emerging Risk Radar Initiative could be leveraged to answer the specific needs of national authorities in charge of developing risk assessment to share costs and improve quality of their products.

- **Monitoring, forecasting and early warnings**: Meteorological monitoring and forecasting depends on daily international data exchange through the World Meteorological Organisation Global Telecommunication System. Similarly, systems are in place to track atmospheric pollutions (including radioactivity or volcanic ash), to provide tsunami alerts (UNESCO – IOC), and to monitor pandemic disease (WHO).

- **Co-ordinated emergency response**: The EU Civil Protection Mechanism, the NATO Euro-Atlantic Disaster Response Coordination Centre and Unit, in addition to UN humanitarian co-ordination mechanisms, are international co-operation frameworks for emergency response. Interoperable tools and common methodologies are shared across these networks. For example, the EU Common Emergency Communication and Information System (CECIS) enables the sharing of information to facilitate emergency communication among the participating states.

An in-depth analysis of these mechanisms (identification, review, evaluation, gap analysis) could probably identify how international co-operation could be better organised to support the management of new trans-boundary crises.

Source : OECD

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