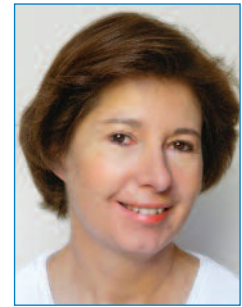


Risk governance by governments



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The 21st century has so far witnessed a host of large-scale disasters across the world including earthquakes, tsunamis, human and animal diseases, terrorist attacks, cyber attacks and major disruptions to critical infrastructures. Risk management must be central to a government's planning as preparation, response, recovery and rehabilitation for disasters become increasingly necessary. Policy-makers must keep up to date with risk issues in order to manage and mitigate risk. In particular, Finance Ministries and treasury departments need to be well informed of government risk management plans, as part of a holistic system, since early investment may mean the cost-effective avoidance or mitigation of unexpected future events.

Risk governance and systemic risks

Risk governance relates to the identification, assessment, management and communication of risks in a broad context. In the context of systemic risks, which typically span more than one country, more than one economic sector, and may have effects across natural, technological and social systems, risk governance requires a comprehensive and holistic perspective. All actors involved in a risk issue must participate in the identification of rules, conventions, processes and mechanisms concerned with how the information about the risk will be collected, analysed and communicated. The next step is that everyone must also be involved, in one way or another, in how and by whom management decisions are taken and implemented.

Regulation, for example, is a common tool for risk governance – but it is also necessary to deal with systemic risks through other forms of risk mitigation, such as self-regulation or risk transfer, or with risk adaptation measures. Experience proves that coordinated action among public and private stakeholders is increasingly required for the management of such risks, in particular when the level of complexity or uncertainty is important – that is, when the risk is difficult to evaluate. For risk management to be successful in such an environment, governments have a vital role to play.

This is particularly true for large scale disasters, when public and private assets are hit, but also for emerging risks.

Risk and exposure

Risks are not necessarily inevitable. There is not much we can do about natural hazards when they are the outcome of systems that man does not control, but many risks show

themselves only if people or assets are susceptible or exposed to the hazard. For example, malaria is not a risk for populations in most western countries, and there are many places in the world where the risk of an earthquake is very small. Similarly, tsunamis and sea level rise are direct threats only in coastal areas. Unfortunately, population settlements and economic development have often occurred in coastal areas which are susceptible to hurricanes, tsunamis or, in the long term, sea level rise. Of course, we can build-up coastal protection, but it is also necessary to avoid further exposure. Thus, governments are expected to provide regulatory and economic incentives to encourage population settlement and the building of critical infrastructures in less vulnerable areas.

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In considering the earthquake hazard in Christchurch it is useful to note that although the city is subject to frequent small or medium size events, no one expected an earthquake of the scale of the one that occurred in February 2011. However, perhaps they should have, since the city had already been damaged by large-scale events in the past. Such events had seemingly been long forgotten. Why did the city continue its expansion when it should have been known that its long-term exposure was high?

Table 1. Contributing factors for emerging risks

Factors that may cause new risks or increase known risks		Possible actions
Loss of safety margins	When the level of connectivity within and between systems is important and the level of stress is high	<ul style="list-style-type: none"> • Decouple elements within a system • Increase buffering capacity
Positive feedbacks	Perturbations or changes within systems are amplified instead of returning to former equilibrium (eg. this happens in financial markets)	<ul style="list-style-type: none"> • Install mechanisms to break the chain reactions
Conflicts about interests, values and science	Efforts made to assess and manage emerging issues may encounter opposition on the grounds of private interests, values or other motives	<ul style="list-style-type: none"> • Share science-based and evidence-based information to avoid escalation of conflict
Information asymmetries	One party knows key information that the other does not know	<ul style="list-style-type: none"> • Try to create trust between parties and foster co-operative mechanisms
Perverse incentives	Incentives that induce counterproductive or undesirable behaviours, or discourage risk prevention efforts	<ul style="list-style-type: none"> • Remove perverse incentives • Provide positive incentives to encourage reasonable risk taking

Contributing factors to risk emergence

In order to avoid or reduce risks in the future, it is useful to be aware of the factors that can contribute to the emergence of new risks or the amplification of existing risks. IRGC has done a thorough analysis of 'contributing factors to risk emergence', in the context of systemic risks. The metaphor we use to describe these drivers is that of a plant emerging from fertile ground – just as certain elements, such as water, nutrients and soil quality, will influence the likelihood that a plant will grow, so too will certain factors increase the likelihood that a risk will emerge (Table 1).

Preparation and the role of the Finance Ministry

When disasters occur, there are a number of critical elements (determined prior to the event) that will influence the total direct and indirect impacts. Beyond 'conventional' elements, such as emergency planning, they include five elements which are worth examining:

- 1. A certain level of anticipation or preparedness for the 'impossible'.** As seen in the cases of the 2011 earthquakes in Christchurch and Fukushima, earthquake registries need to go back further into historical record. What is required is both an awareness that something which has not happened in the recent past could still occur, and the capacity to be prepared for the unexpected. Surprises are inevitable and one must be prepared to be taken by surprise.
- 2. Capacity to receive early warning signals.** This implies that early warning systems have been developed and installed, and that there is regular testing that positive signals can be emitted. This also requires that emitters and receivers of the signals have been trained both to analyse them and to act on them.
- 3. Vulnerability assessment of the affected population.** Vulnerability assessments are not the norm in many countries, but are very useful for evaluating where financial resources can be allocated in the most cost-efficient manner.

4. Consideration of risk transfer solutions, and implementation whenever possible. Risk transfer solutions, such as those proposed by insurance companies, also exist for natural hazards and can be very effective as they enable quicker economic recovery. Not only can catastrophic risks be insured, but paying insurance premiums can often also provide a strong motive for taking preventative measures and implementing risk adaptation solutions.

5. Building capacity for robustness and resilience. Whereas robustness deals primarily with increasing the insensitivity or resistance of parts of systems to small changes within well-defined ranges of the risk consequence, resilience is a protective strategy against unknown or highly uncertain hazards. At the level of government action, it includes, for example, building 'redundancies' (extra facilities or equipment in case of failure of the core set) into critical systems.

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These five elements require the consideration of Economic and Finance Ministries. The advance investments required are often costly in available resources, and demanding in political will. But the systemic consequences may be so far-reaching that they are certainly worth considering. When the SARS virus hit in 2003, originating from Asia but spreading respiratory disease to over 30 countries, Toronto was severely affected. Globalisation and international trade imply interconnectedness of economic systems, to the extent that virtually any critical shift in any financial market can have an impact in international markets.

What is the role of government?

Governments have to manage a portfolio of threats of different natures that may affect their territory or



Credit: Flickr/Martinluff

Damage to a road after the 2011 earthquake, Christchurch, New Zealand.

citizens, either directly or indirectly. Prior to the management stage, they have a responsibility to identify, assess and understand these threats. This is done via the preparation of risk maps and aggregated risk metrics, constituting 'national risk assessments' and thus going beyond classic national security approaches towards a broader definition, based on societal perspectives not confined by state borders. Homeland safety and security includes ensuring that people, assets and the environment are protected, and that safe water and food as well as public health and energy are provided in a reliable and resilient manner, whatever kind of hazard should arise.

Governments can take the initiative of increasing the level of preparedness, requiring investment in early warning systems.

In March 1989, a solar storm caused geomagnetically induced currents that resulted in the failure (within 90 seconds) of the entire Quebec-Hydro power grid in Canada, leaving 6 million people without electricity for up to nine hours. In the case of a larger event the size of the 'Carrington event' of 1859 (a huge solar flare that induced powerful electromagnetic effects on earth) it would not be hard to imagine that widespread electric power blackouts could occur as electricity transformers overheat and fail. As damaged transformers cannot be repaired in the field and must be replaced with new units, which have manufacturing lead times of twelve months or more, long-term blackouts and chronic shortages may persist for some time. Today, governments can take the initiative of increasing the level of preparedness, requiring investment in early warning systems (electricity grids would have to be cut off within a few seconds) and in building redundancies for critical equipment and networks.

Risk management in governments

A number of Commonwealth countries, including Singapore, the UK and Canada, have developed new approaches to governmental risk management. These can be summarised as being 'all-hazard approaches' for preparing and regularly updating risk 'maps' to assess risk at the national scale, and 'whole-of-government' approaches, whereby all departments are collectively involved in managing the risks. These country risk management approaches look promising for improving preparation and minimising the impact of disasters when they occur, whatever the disasters may be. They aim, for example, to enable the safe functioning of a minimal level of critical infrastructures (including energy, water, food and healthcare services), so that the society and the economy are not too hard hit and can recover faster.

All Commonwealth countries should be encouraged to invest in innovative approaches for managing risks.

Partnering for country risk management

Faced with increasingly systemic risks, it is time to engage. All Commonwealth countries should be encouraged to invest in innovative approaches for managing risks that may affect their citizens and the economy. Some Commonwealth countries already have experience that can be shared with the others.

Marie-Valentine Florin is the managing director of IRGC. In this role, she facilitates the collaborative production of science- and evidence-based information for risk governance, and the outreach to decision-makers. She joined IRGC in 2006 and was appointed director in 2010. She played a key role in reformulating IRGC's strategy and is now active in redesigning its positioning, offer and services to public and private sector organisations, establishing bridges and dialogues with scientists and risk experts.

The International Risk Governance Council (IRGC) is an independent foundation, based in Geneva, whose purpose is to help improve the understanding and management of emerging or potentially global risks that have impacts on human health and safety, the environment, the economy and society at large.

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