

**CREATING A BETTER ARCHITECTURE
FOR GLOBAL RISK MANAGEMENT
OF CATASTROPHIC RISKS**

The 2009 Global Agenda Council on Catastrophic Risks

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EXECUTIVE SUMMARY

Preventing and preparing for catastrophic risks is critically important for five reasons: 1) many catastrophic risks are intensifying; 2) we remain largely reactive, fragmented, and self-interested rather than strategic, integrated, and public-spirited; 3) there is no natural and appropriate overarching institution through which we can, as a global society, accurately assess and consciously and intentionally address and manage global risks; 4) there are few effective institutions for balancing conflicting values and priorities in the face of future risks or in the presence of ongoing emergencies; and 5) existing modes of risk communication appear to be confusing the global public about the level of risk, the appropriate responses to risk, and the likely consequences of not undertaking mitigation efforts with regard to risk.

The World Economic Forum Global Agenda Council on Catastrophic Risks thus addresses the challenge of developing better risk management institutions for successfully confronting potential large-scale and widespread disasters. We view the problem of developing an appropriate and effective set of global risk management institutions as a classic problem of “acting in time,” and that requires that the set of institutions 1) foresees risks, or at least the possible consequences of risks, clearly enough to enable us to develop approaches to managing them; 2) makes estimates of the probability or frequency with which the risks or consequences will occur; 3) identifies or develops cost-effective means for reducing the anticipated costs that will flow from these risks or their consequences; and 4) mobilizes our capacities to build those elements of prevention and preparation that need to be carried out in advance of the anticipated events.

Drawing on this framework for identifying the critical challenges of comprehensive risk management, the Council believes that the highest-return areas for improvement lie in the area of better applying knowledge that already exists about risks and how they can be prevented, mitigated, or addressed – of closing the gap between what is already known about significant risks and what has actually been done to address them. The Council accordingly proposes a *process* for developing better institutions, organizations, and networks that will collectively constitute a better global risk management effort. What we need is not a single proposal to

debate, but rather a way to convene a dialogue to focus on the inadequacies of the current regime and to creatively and inclusively work toward the construction of a new global risk management system.

The Council believes that the world needs to convene a high-level, inclusive dialogue including business leaders, political leaders, and civil society leaders to reconstruct and redesign the architecture of global risk management. This would have to be inclusive, focused on a broad array of risks, comprehensive in approach, and integrative. To jump-start the process, we suggest that the World Economic Forum convene, in the fall of 2010, a design group of 50 to 75 business leaders, politicians, civil society leaders, and experts in risk assessment and management from around the world to examine and consider the existing collection of global risk management efforts and to begin the process of defining a more comprehensive and integrated system.

INTRODUCTION

It would be hard to have lived through the last few years of global events – through the wrenching financial crisis and its associated collapses of major financial institutions and its resultant global economic slowdown, recession, or even depression in some regions; through the tragic Indian Ocean tsunami in 2004, Hurricane Katrina on the Gulf Coast of the United States in 2005, earthquakes first in Pakistan in 2005, then in Wenchuan in 2008; through the disastrous cyclone in Myanmar in 2008; through 2009 with H1N1 as a “near miss” or perhaps “yet to be” threat; through the earthquake in Haiti in 2010 with its catastrophic and, sadly, largely preventable loss of life and with its often heroic but also often imperfectly-coordinated relief actions; and, then the Chilean earthquake in 2010 with its clear demonstration that building codes and enforcement can radically reduce lives lost even in historically massive seismic events – and not conclude that as a global society we do not yet have as comprehensive and effective a suite of global risk management mechanisms as we seem to need. We clearly need better institutions to prevent and prepare for catastrophic events and to respond to them when they do occur.¹

¹ For simplicity, throughout this discussion we will most frequently use the word “institution” in describing the possible or suggested changes in global risk management architecture that we are examining. We do not assume, however, that what is needed is a single organization or institution. We may need many institutions, entities, organizations, networks, and mechanisms, and together with existing risk management entities they will collectively constitute what we are referring to as the “global risk management system.” While we will generally use the word “institution,” we mean this to encompass a wide range of different possible elements of the system architecture – and we will sometimes use other descriptions (mechanism, network, system, and so on) so as not to convey the misapprehension that our discussion is limited to the possibility of a single institution or to institutions of the traditional kind.

PREVENTING AND PREPARING FOR CATASTROPHIC RISKS

We propose that progress in preventing and preparing for catastrophic risks is critically important for five interrelated reasons:²

First, *many catastrophic risks are potentially intensifying*. The accession of nuclear weapons by one or two additional states would be likely to create rapid proliferation of nuclear explosives in a number of other countries (some observers have suggested that literally dozens of countries might follow). In a number of countries, depletion of fossil underground water threatens to cause rapid changes in crop production and significant shifts in the overall balance of food production and consumption. All scientifically-based scenarios of climate change imply that we will see significant – and rapid – changes, even if we also aggressively pursue policies of climate change reduction, so that major efforts at adaptation are crucial to minimizing overall losses from rising sea levels, cyclones, droughts, and floods. The world economic order proved itself over the last eighteen months more fragile than we had imagined, and few would argue that structural changes commensurate with the level of demonstrated risk have yet been undertaken. We continue to experience high rates of population growth in areas of high hazard – in low-lying areas of Bangladesh and Myanmar, where cyclones repeatedly threaten the lives of millions, in seismically-active zones across Asia and in Indonesia, and in malaria-infested areas of Africa. And the world and its major systems – financial, food production and distribution, communications, information exchange – continues to become increasingly tightly interconnected and interdependent, creating a rising risk of system-level collapse.³

Second, as a global society, in the face of both long term and short term risks, *we remain largely reactive, fragmented, and self-interested rather than strategic, integrated, and public-spirited*. For a variety of reasons, human beings and human institutions are not intrinsically very good at managing risk. First, the public at large often ignores risks entirely; knowledge and attention to risk is frequently limited to specialists. Second, people often do not process information about probabilistic events accurately and effectively, and therefore systematically underestimate many risks. Third, people often have trouble appropriately balancing the future against the present. Finally, people often find it difficult to maintain focus on threats and negative outcomes. Large scale risks, of course, present all four of these difficulties in concert. In addition, our institutional fragmentation (which arises from an often-appropriate quest for specialized expertise and focus) generally creates a difficulty in formulating a more comprehensive overall view of the risk landscape – and when attention is fragmented, response is tactical rather than strategic. We need a system that facilitates broad identification of risks and generates attention among a larger community of global leaders, thus enabling development of more systematic and comprehensive approaches to address these risks.

² The discussion in this section closely follows and builds on ideas and dialogue at the “Global Risks” tables at the WEF annual meeting in Davos in January 2010, which included participants from a number of risk-related Global Agenda Council groups, and we are grateful to the participants at those tables for many of these ideas and observations.

³ “System accidents” result from the reverberation of forces in tightly-linked interconnected systems – a phenomenon described by Charles Perrow in *Normal Accidents: Living with High-Risk Technologies* (Princeton, NJ: Princeton University Press, 1999).

Third, *there is no natural and appropriate overarching institution through which we can, as a global society, accurately assess and consciously and intentionally address and manage global risks*. There is no general and comprehensive institution or approach to viewing global risks together – to the extent to which risks are attended to, it tends to be through a wide array of only very loosely coordinated clusters of organizations and entities, with each tending to be focused on a relatively narrow bandwidth of hazards and consequences. It is generally quite difficult to compare risk levels or efforts across different risk domains – so our attention tends to be spotty, at best episodic, and often most focused on issues that have direct consequences for our own parochial interests. There is nothing intrinsically wrong or immoral about that focus – but it does not generate a comprehensive, global picture or globally-focused collection of risk-management actions. We strongly believe that our global society needs to work on developing a system with this broader focus.

Fourth, *there are few effective institutions for balancing conflicting values and priorities in the face of future risks or in the presence of ongoing emergencies*. In familiar emergency situations, the hierarchy of values has been thought about and generally a consensus has emerged about what the principal issues are – but in facing unprecedented risks, priorities may arise that societies have not previously thought their way through. Because facing future risk intrinsically involves balancing conflicting values – current resources against future savings, for example, or against future losses of different kinds – the ability to frame and deliberate about values tradeoffs is a central requisite of an effective risk management institution.

Fifth, *existing modes of risk communication appear to be confusing the global public about the level of risk, the appropriate responses to risk, and the likely consequences of not undertaking mitigation efforts with regard to risk*. The 2009 H1N1 pandemic was first advertised as potentially deadly, but did not in fact in most instances turn out to be, and most people’s experience of the pandemic is that it is no more threatening than seasonal flu. The truth is somewhere in between – for pregnant women and in the younger age groups, and especially for those with other underlying health conditions like asthma, H1N1 constitutes a significantly elevated mortality risk as compared with seasonal flu. But the resulting risk message is complex, detailed, and confusing – and the public appears to have little patience for its nuances.

THE CHALLENGE OF DEVELOPING BETTER RISK MANAGEMENT INSTITUTIONS

For all of these reasons, we believe the time is right for making progress on developing better approaches to global risk management. The World Economic Forum Global Agenda Council on Catastrophic Risks thus addresses the challenge of developing better risk management institutions for successfully confronting potential large-scale and widespread disasters. This is a broad challenge, and a complex one. We do not have a single answer to the question of what additional forms or institutions or mechanisms of risk management our global society may need to better address the risks we collectively face. We believe that we almost surely need more than one change, and that perhaps we may need a number of changes in the form of alterations to existing institutions, development of new institutions (public, private, and civil society), and new

means of coordination among existing and new entities to provide a more effective global capacity to anticipate, prepare for, respond to, and recover from catastrophes of a wide array of types. We strongly believe, however, that existing institutions, as currently operated, have repeatedly shown themselves to be less than adequate to this crucial task – as recent events have again painfully demonstrated.

The Council is focused on low-probability but high-consequence events that have a severe impact on many aspects of populations and businesses on a local, regional, or global scale. Catastrophic risks are characterized by high severity, often along multiple dimensions, including physical losses and social, political, and economic consequences. And they are generally characterized by our inability or failure to adapt successfully in the relevant time frame to evolving events. Catastrophic risks include potential disasters stemming from a wide range of sources, including hurricanes, earthquakes, fires, pandemics, and financial meltdowns.

Our Council is concerned with identifying common principles to prevent, mitigate, respond to, and recover from the wide range of catastrophic incidents that may strike us at any time – some with little or no warning and with sudden impact (such as earthquakes), some that usually have at least some warning (such as volcanoes and hurricanes), some that develop more slowly (like pandemics that take weeks or months to spread across the globe), and others that develop even more gradually (“slow burners”), with a long buildup to catastrophic outcomes (such as some forms of financial crises, the increasing shortage of water resources, and global climate change)..

The Council believes that more can be done to understand the nature and sources of extreme risks so as to prepare populations, leaders, and policy-makers to reduce the consequences of such risks through prevention and increased readiness when these disasters strike.

Much work on disaster reduction has already been achieved, ranging from the United Nations’ International Decade for Natural Disaster Reduction in the 1990s to the World Economic Forum’s 2008-2009 Global Agenda Council on the Mitigation of Natural Disasters. Nevertheless, dangerous gaps remain in the world’s approach to catastrophic risks, starting with sub-optimal private sector and local community engagement. Hence, one of the Council’s priorities is to assist companies, business associations, and communities identify risks more accurately in order to help them gain a greater understanding of the diverse and often heavy costs they may incur through inaction or disinterest.

Similarly, more could be done with regard to the integration of innovation in mitigating catastrophic risks. Indeed, while the impact of many catastrophic events can be reduced through the application of research-based knowledge and proven technologies, the preventive value and even commercial worth of such applications are often under-appreciated.

Finally, there is often a misunderstanding of what catastrophic risks really are. These risks differ from their “moderate” counterparts in qualitative terms – not only in quantitative ones – and they are constantly evolving. Tomorrow’s large-scale disaster is unlikely to closely resemble today’s.

With these failures in mind, it is essential for the general public as well as for key leaders to understand that catastrophes affect not only those proximate to a disaster but also, increasingly,

those far removed from the disasters, through the far-reaching global interdependencies that permeate contemporary travel, trade, and finance.

While the likelihood of a particular catastrophe in a specific region in a given year is low, their aggregate global ramifications over several years can be large. Indirect costs, while often hard to measure, are also particularly insidious. The private sector, government agencies, and non-governmental organizations thus share a common interest in addressing these issues. Risks constitute probabilistic liabilities, and, as such, need to be managed as (contingent) liabilities. This means that they have “owners” – the equity owners of a given risk are those who will, if and when it occurs, pay for its damages (whether or not they are aware in advance of whom they are). Thus, an important part of getting large-scale risk management right is transparency about who the risk owners are (so that they will have appropriate incentives to manage those risks as cost-effectively as possible). Drawing on these shared concerns, the Council’s work also usefully points toward session ideas for future meetings of the World Economic Forum, and contributes to the themes of the Global Redesign Initiative.

GLOBAL RISK MANAGEMENT INSTITUTIONS

We view the problem of developing an appropriate and effective set of global risk management institutions as a classic problem of “acting in time.” In order to act in time in the face of risk, risk-owners have to accomplish four tasks; they must

- (1) foresee hazards (or at least the possible consequences of hazards), clearly enough to enable us to develop approaches to managing them;
- (2) make some estimate of the probability or frequency with which the hazard (or consequences) will occur;
- (3) identify or develop cost-effective means for reducing the anticipated costs that will flow from these hazards or consequences; and
- (4) actually mobilize our capacities to build those elements of prevention and preparation that need to be carried out in advance of the anticipated events.

A fully effective overall global risk management strategy (and suite of institutions) would result in our collectively acting in time – and it would thus need to embody capacities corresponding to the four elements of acting in time. First, it would need to have capabilities to imagine and assess hazards (the probabilities of events) and risks (the possible consequences to people and valued assets). This component is often referred to as the capability to carry out *risk assessment*.

Second, it would need the ability to explore, develop, discover, identify, and formulate actions that can be taken that would cost-effectively reduce losses from these foreseen events and circumstances. This component is sometimes referred to as the ability to develop strategies and tactics of *risk management*. Finally, it would need to be able to connect with and influence the

relevant organizations – international, national, civic, and private – to mobilize and coordinate amongst themselves to take the appropriate actions on a timely basis in advance of the hazards becoming realities.

HIGH-RETURN OPPORTUNITIES FOR GLOBAL RISK MANAGEMENT

We believe that there are important gaps in global performance in the face of risk in all three of these areas. Further institutional and methodological development is thus needed to improve risk assessment and risk management, and we need institutions that are effective in mobilizing resources and action once appropriate risk management opportunities have been developed or identified. We recognize, however, that the development of better risk assessment and risk management institutions capable of mobilizing action is likely to take a considerable time, and is likely to be an ongoing and evolving challenge, as the continuing evolution of society and its economies and its interdependencies will produce an ever-changing risk landscape. We therefore think it is important to direct efforts first at where the highest returns can be obtained for the least incremental effort, and build out over time to the areas where more difficult institutional development challenges are encountered.

Taking into account the “acting in time” framework for identifying the critical challenges of comprehensive risk management, *the Council believes that the highest-return areas for improving global risk management lie in the area of better applying knowledge that already exists about hazards and how they can be prevented, mitigated, or responded to.* Our council strongly believes that there are many areas of global risk where we are not successfully acting in time. In particular, the Council believes that there is important knowledge about the nature and level of hazards and value at risk and about how losses to value in the face of those hazards could be significantly and cost-effectively reduced that is not being appropriately and effectively applied and responded to. We refer to this as a *knowledge-action gap* – we perceive a number of areas where there is a good understanding of risk levels and how they can be reduced, but where there has been a failure to mobilize successfully to address them. Viewed in the “acting in time” framework, we are arguing that *the greatest opportunities for rapid progress lie in closing the gap between what is already known about significant risks and what has actually been done to address them.*

IMPROVING GLOBAL RISK MANAGEMENT

How, then, might we make progress toward reforming existing institutions, creating new organizations or other entities that can effectively contribute, and finding new and better ways for all of these organizations to work together successfully to improve risk outcomes? This is a large and complex task that will require considerable work over a long period, and continuing work to keep it adaptively suited to the ongoing evolution in the landscape of large-scale risks. Accordingly, we do not wish to propose a single new entity or other specific reform. Instead, we want to propose a *process* for developing better institutions, organizations, and/or networks that will collectively constitute a better global risk management effort. *We believe that what the world needs is not a single institution or proposal to debate, but rather a way to convene a*

dialogue to focus on the inadequacies of the current regime and to creatively and inclusively work toward the construction of a new global risk management system.

In proposing this process, we are open to the possibilities that new arrangements might be undertaken in one or more existing international authorities, under one or more newly-created authorities, or through voluntary agreements or collaborative practices. The Council believes that the new arrangements might involve multinational organizations, national governments, and non-governmental organizations, and that they could operate through institutions that are not organizations in the formal sense. For example, forming an agreed-upon set of international standards and protocols for data exchange could create a network or “cloud” that is not a traditional organization, though it might have an associated organization that maintained it, managed membership, and enforced compliance with standards. Forming and operating a market-based prediction mechanism would provide a way for information about risks to be exchanged but similarly does not constitute an organization in a conventional sense, though it would presumably need to be established and operated by some organizational entity.

We thus proceed, in the following sections, with three types of suggestions. First, we propose *a process* be convened to develop and manage a dialogue to produce proposed reforms and recommendations for a better array of risk management institutions and processes. Second, we propose *design criteria* that the institutions and reforms should be designed to achieve. Third, we provide some *illustrative examples* of reforms and institutions that are intended to exemplify the kinds of possibilities that could be explored, but they should not be seen as specific recommendations.

CONVENING A PROCESS TO REDESIGN GLOBAL RISK MANAGEMENT

First and foremost, we believe that the world needs to convene a high-level, inclusive dialogue including business leaders, political leaders, and civil society leaders to reconstruct and redesign the architecture of global risk management.

It is difficult to look at the recent track record of large scale hazards that have befallen the global society and conclude that the existing risk management process is a success. Given the rather remarkable collection of recent global experiences with major hazards, the time should be ripe to convene a dialogue that could bring a high degree of intentionality and intelligent design to formulating a more comprehensive and effective global risk management system.⁴

It would be hard to describe the existing collection of risk-oriented organizations as a “system” – or, at least, as an intelligently designed system displaying a high degree of intentionality and a

⁴ In making reference to a “system,” we do not mean to imply that a single organization could or should seek to carry out risk management and comprehensive risk management strategy for all locations. Indeed, it seems to us unlikely that a single entity could successfully undertake such a large, broad, and varied collection of tasks. We refer to a system (rather than a single or specific entity) because such a system may need to have many constituent parts that undertake different components of the overall task. Because risks in different places are related to one another, different component parts will need to be coordinated, networked, or otherwise engaged with each other.

grasp of the political and social challenges of risk management. A central commonplace of system theory is that a system is perfectly designed to produce the results it in fact produces – and, on that theory, the current global risk management “system” appears to be designed to produce neither effective prevention and mitigation nor very effective response nor particularly rapid recovery.

The Council views the first step as a “constitutional convention” of sorts – that is, as a convening for the purpose of designing a new (reformed) architecture within which global risks can be better assessed and addressed. It might need to proceed in several stages – first establishing design criteria, then developing a general architectural design, and finally developing, creating, or authorizing new institutions or components of that design.

Such a dialogue could be convened by the United Nations (or by one of its constituent agencies), by an organization like the World Economic Forum, by one or a collection of non-governmental organizations, by one or a collection of academic organizations or think-tanks, or perhaps by some combination of organizations. The keys to success for such a discussion, in our view, are that it be:

- (1) **inclusive as to points of view and stakeholders involved** – the dialogue must involve stakeholders from a wide array of different histories, backgrounds, and experiences. India, Brazil, and Mongolia face different kinds of risks and face these risks in different ways; we will not make much progress overall if we do not take into account the differing experiences, histories, and imperatives of the organizations that can usefully contribute to the process;
- (2) **broad as to risks considered** – the purpose must be to provide a very general view and to develop a very general platform for dealing with a wide range of risks. This does not imply that the result must necessarily be one “super-agency” that is designed to deal with the full spectrum of risks, but it does imply that the system as a whole should span the landscape of different risks;
- (3) **comprehensive as to approaches to managing risks** – the discussion and the resulting system and constituent institutions must be able to contemplate, analyze, recommend, and activate the full spectrum of possible responses to risk, ranging from prevention and mitigation through preparation of response capabilities to response and recovery. For different risks, different approaches are most cost-effective, and the spirit of this dialogue must be to create capabilities to encompass the full range of possible effective responses;
- (4) **integrative** – the result must be system that successfully spans and thus helps decision-makers view together (and thus helps them to set priorities among) the full range of global risks, thereby enabling the evaluation of the relative cost-effectiveness of different tactics **within** a given risk category as well as the development of appropriate priorities for actions **across** risk categories. Thus, for example, the dialogue needs to encompass the development of a system that can distinguish among effective forms of remediation to reduce seismic risks (and recommend or specify building standards and other forms of risk reduction) and that can also make judicious comparisons across risk areas to

distinguish domains in which actions are largely consonant with appropriate cost-effective practices from those areas in which action falls dramatically short of what is needed.

As a specific proposal, we suggest that the World Economic Forum convene, in Fall 2010, a “design group” of 50 to 75 business leaders, politicians, civil society leaders, and experts in risk assessment and management from around the world to examine and consider the existing collection of global risk management efforts and to begin the process of imagining a more comprehensive and integrated system.

The resulting proposed architecture – or alternative options for this architecture – should be a significant focus of discussion and debate during the WEF 2011 annual meeting. The “design group” should then reassemble in the spring of 2011 for the purpose of producing specific actionable recommendations to identified entities with the capacity to act for (a) one or more new institutions needed for global risk management; (b) proposed changes in or reforms to existing risk-related organizations; and (c) proposed new networks, collaborative infrastructure, and institutions for data exchange and aggregation for existing and new organizations.

To support the discussion among the “design group,” it may be helpful to provide an introduction to and training in risk analysis and management issues for members of the group who do not have previous experience with common language and forms and techniques of risk description, analysis, and management.

DESIGN CRITERIA

The reforms that result from the discussion we are proposing may involve multiple parts – the creation of new entities, new forms of cooperation and collaboration across existing (and new) entities, new processes of data sharing, and so on. When all is said and done – when the various existing and new organizations and institutions and processes are in place and functioning effectively – there is a set of functions that need to be performed and capabilities that this system of organizations and actors needs to be continuously operating. These are, in effect, the *design criteria* for the system – the features that it must have if it is going to be fully effective in confronting global risks more successfully and, thus, the features that it must be designed to have. For purposes of discussion, we will presume that what will emerge can best be described as a global system of risk management. In this section, we outline what we believe some of the design features of this system need to be.

The system would need to assess hazards and risks and scan for low probability, high-consequence events, and it could also monitor real-time catastrophic risks across a range of areas (e.g., drawing upon a wide range of sources, including the World Health Organization, World Food Program, and other well established sources, possibly including private sources and services). It would involve all stakeholders including national governments, international agencies, non-governmental organizations, and major corporations.

The system needs to be able to encompass the full range of available risk management strategies. The Global Agenda Council antecedent to this one, which focused on the mitigation of natural hazards, articulated an outline, referred to as the “comprehensive risk management framework,” of five alternative forms of actions that can be taken to reduce the losses associated with hazards:

- (1) prevention and mitigation of the consequences of a hazard in advance of its advent;
- (2) preparation of an effective response in the event that the hazard does eventuate;
- (3) preparations for making a speedy recovery from the consequences that do arise;
- (4) activation and execution of the response if the event occurs; and
- (5) execution of the recovery after the event takes place.

Each of these five areas potentially provides an opportunity for cost-effective intervention against the possible losses from a hazard. A “comprehensive risk strategy” thus consists of a balanced portfolio of investments across these five opportunities, with an appropriate overall level of resource expenditure across the five areas, with judicious decisions about which area(s) of intervention is/(are) likely to be most valuable, and with an effective search within each area for the most cost-effective investments of that type.

As an example, consider what a comprehensive approach to risk management might involve in the case of protecting people living on low-lying shore areas of the Padang region in Indonesia (which last September experienced a sizable offshore earthquake that caused a tsunami and extensive damage to buildings, including schools, onshore). According to seismologists, this area remains at risk for a very large earthquake (on the scale that caused the Indian Ocean tsunami in 2004). A *comprehensive risk management institution* (CRMI) for such an area would develop and oversee the implementation of a balanced and coordinated set of actions including:

- 1) efforts to reduce damage by retrofitting existing buildings and undertaking new construction built to higher structural code levels with greater reinforcement and seismic resilience, and by building a rapid warning system and escape routes so that people in low-lying areas can readily move to higher ground to escape the immediate impacts of the anticipated major tsunami;
- 2) additional efforts to organize rapid response, especially locally since in seismic events rescue in the first minutes and hours is dramatically more likely to be successful;
- 3) efforts to organize in advance the ability to rebuild and recovery quickly, perhaps, for example, by maintaining a national stockpile of easily transportable building materials or by making advance stand-by procurement arrangements for materials that are likely to be needed;

- 4) rapid and effective execution of a well-coordinated local, national, and international response in the aftermath of an event; and
- 5) rapid and determined execution of a coordinated recovery process driven by local leaders but supported and assisted by resources from regional, national, and international agencies.

An institution for global risk management must, therefore, be designed in a way that allows it to develop a comprehensive risk management strategy against major global risks – that is, a balanced portfolio of the right overall level and right mix of investments across the five possible areas of intervention, with effective search within each area to find the highest net value interventions. The global risk management system should be designed to develop and implement comprehensive risk management institutions that can in their turn develop and encourage implementation of comprehensive risk management strategies.

The system would thus need to be designed to:

- (1) bring greater attention to the long-term indirect and unexpected consequences of catastrophic risks, their root causes, metrics for them, and the best practices for preventing and responding to them;
- (2) create a better dynamic characterization of best practices and a stronger capacity for conveying the practices to agencies and organizations that could make use of them;
- (3) ask major United Nations agencies and international organizations, national governments and multinational companies to conduct a risk and vulnerability analysis for their own societies and organizations in facing a set of canonical catastrophic risks identified by the organization;
- (4) devote attention to building leadership and resilience in organizations responsible for addressing catastrophic risks in cities and communities faced by such risks, and better informing decision makers who must confront and respond to the risks; and
- (5) help to address the capability gap between the scale of risks and the level of resources reasonably available to address them. Many countries, and particularly some developing countries, face increasing concentrations of risk as population growth continues in high-hazard areas, but do not seem to be able to divert resources from dealing with immediate needs in order to manage the prospective risks.

We believe that the system (and one or more of its component institutions) should be tasked with:

- (1) developing methods for improving imagination about catastrophic risks and creativity in facing their consequences;

- (2) building better appreciation for the metrics of indirect long-term consequences and losses to general social welfare;
- (3) developing more simplified and effective risk communication strategies based on scientific knowledge about how to convey risk information;
- (4) working to decrease the knowledge gap between disaster-experienced and non-experienced countries;
- (5) developing better understanding of the antecedents, co-factors, and underlying causes of catastrophic risks;
- (6) establishing the appropriate distribution of risk “ownership,” responsibility, and accountability” across sectors and organizations;
- (7) developing a dynamic catalogue of best practices and risk assessment methods;
- (8) developing institutions for sharing information, expertise, and resources in the aftermath of an emergency;
- (8) building scenarios for both specific types of catastrophes and more generic complexes of consequences;
- (9) strengthening a host of measures for assessing catastrophic risks, including prediction markets, insurance data, statistical information, and other aggregation devices for forecasting catastrophic risks.

Planning for and development of the institutions involved in this system should draw upon the experience of the Global Fund to Fight AIDS, Tuberculosis and Malaria and other existing models.

OPTIONS FOR IMPROVED GLOBAL RISK-MANAGEMENT

We outline options for institutions that we believe could, in combination with other existing institutions, constitute a more effective suite of global risk-management institutions. These options are intended to be neither singular, nor exclusive, nor comprehensive. They are not singular in the sense that we do not believe that any one single institution can successfully provide overall global risk management. They are not exclusive in the sense that we believe they could and should be used in combination with other existing institutions (and with each other). And they are intended to be illustrative rather than comprehensive – we certainly do not believe that we have exhausted the range of possible useful institutional reforms and new developments.

Option A: A new transnational civil society organization. One option would be the creation of a new international civil society organization with the mission of collecting, aggregating, and analyzing risk-related data, identifying gaps between apparent risk

levels and the level of mitigating actions, and encouraging relevant organizations to undertake actions to reduce risks where such gaps are found to occur.⁵

Option B: A new function of a private organization. A second possibility would be to organize a more effective risk scanning and analysis function within a non-profit private organization (like the World Economic Forum) that is dedicated to serving broad public interests. Such an organization could draw on many existing efforts in both the public, nonprofit, and private sectors.

Option C: A new collaborative network process. A third option would be to create a process that aggregates the risk-related information produced by existing organizations into a more integrated whole, with the intent of creating a more balanced and comprehensive picture of the overall array of global risks. Existing specialized organizations (WHO, for example) that scan for and track specific domains of risk (health risks, in the case of the WHO) would contribute data that would be aggregated, disseminated, and analyzed to form a “common operating picture” that is made widely available and subject to debate, correction, and interpretation. This would constitute a “wisdom of crowds” approach – and would operate through creating infrastructure and processes through which the wisdom of other organizations could be aggregated and utilized.⁶

Option D: A new partnership between an international organization and a civil society or private sector organization. A variation on Option C would be a partnership between an existing, already-authorized international organization (like the UN or World Bank) and an existing civil society or private organization (like the World Economic Forum). Using an existing component of an organization like the UN (for example, the UN’s International Strategy for Disaster Reduction) may help to confer legitimacy (especially in areas where the UN’s influence tends to be strong, as in some developing

⁵ We are mindful that a number of civil society organizations that already exist that might meet, or might partially meet, or might in combination meet, this general mandate. For example, the International Emergency Management Organization will meet this spring, and intends to present a declaration on the prevention of emergencies. While this would not cover the entire landscape we are envisioning, it could certainly be a component of a group of entities that jointly constituted a new, broad institution. (Or alternatively, it could be part of a network of the kind envisioned in Option C, below.)

⁶ In outlining this alternative, we are mindful, and respectful, of the many existing organizations and efforts that deal and have dealt with risk assessment and the mobilization of prevention and mitigation efforts. The International Decade for Natural Disaster Reduction (IDNDR) and the associated Yokohama conference and Strategy and Plan of Action, the International Strategy for Disaster Reduction, the 2005 Hyogo Framework for Action, the Provention Council hosted by the World Bank and the Federation of Red Cross and Red Crescent Societies, and the UNDP’s Bureau of Crisis Prevention and Recovery, to name just a few, all constitute important work on identifying and figuring out how to manage major risks, and these or other efforts like them are likely to be durable elements of the landscape. There are also organizations and efforts that are already moving to coordinate the data and actions of other organizations. For example, the Disaster Reduction Hyperbase project, which builds and operates in part through linkages to and among other projects, could provide experience and perhaps a model on which the kind of effort we are suggesting here could build. Our intention is not to re-invent existing institutions, but to build on them as powerful precedents and to suggest, under this option, that one approach might be to treat them as elements of a network and figure out how best to combine and aggregate their work and findings.

countries), while alliance with a less bureaucratic and more nimble organization may allow the resulting combination to be more adaptable, flexible, and effective.

Option E: A new transnational organization. A fifth possibility would be the creation of a new entity that is explicitly both transnational and trans-sectoral – that is, it would include as constituent components or as collaborating partners a variety of national government organizations and international civil society organizations. Using the networks of information, scanning, and analysis thus brought together, it would work to identify and prevent and prepare for catastrophic risks. It would seek to centrally identify the strategy and mission but work with and rely upon local and grass-root initiatives. It would operate top-down strategically but bottom-up tactically – that is, overall goals and direction goals would be set through its central governance process, but it would draw on, aggregate, and disseminate information from and about grassroots organizations and action – and would seek to encourage decentralized and widely distributed responses by local and national organizations to identified risks.

CONCLUSION

We have outlined the need for an improved system of risk management for large-scale global risks. In an attempt to advance discussion about how progress might be made in constructing a more effective system, we have presented suggestions in three stages. We have proposed the convening of a process for exploring and designing such a system, together with design criteria that the system should be capable of, and, by way of providing examples and the basis for further discussion, we have outlined some preliminary options. To say that a great deal of work lies ahead is an understatement. Indeed, we do not believe that this work will ever truly be finished – we expect that it will need to be revisited on a continuous basis as the landscape of global risks continues to evolve. Our hope is that our Council can help to start this ongoing dialogue and effort.

The essential first step is for the World Economic Forum, as part of its Global Redesign Initiative, and working with the sponsoring governments of Qatar, Singapore, Switzerland, and Tanzania, to select a design group and provide it with budget resources and authority to convene appropriate meetings and discussions to reconsider the general architecture of global risk management and to propose appropriate new institutions or reforms of existing elements of the system. The culmination of this process should be the unfolding and discussion of proposed new and reformed elements of the process at the World Economic Forum's next annual meeting at Davos in January 2011.