

## **Forward Resilience: Protecting Society in an Interconnected World Working Paper Series**

### **Toward Greater Resilience in Uncertain Regions**

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On October 4, 2016, while Hurricane Matthew battered Haiti some 1,000 miles and four days away from a position where it could even threaten U.S. coastal communities, Governor Nikki Haley of South Carolina ordered an evacuation. She described her state as being within a “cone of uncertainty” in terms of the potential path of the storm and decided to get ahead of it. “We can always pull back, but you can’t get that time back if you wait too long,” she reportedly said.<sup>2</sup>

It was a wise, if controversial, decision. Even with thousands evacuated, the hurricane would cause at least 22 deaths and leave thousands with flooded homes and many more without electricity.<sup>3</sup> The damage would have been greater if she had waited.

Governor Haley’s dilemma and the decisions she made are just small examples of the challenges and choices the world community must increasingly face. After decades of warning about emerging trends that could have devastating impacts on human communities, the world is now experiencing those impacts. The risks have become greater and more uncertain, and as events and information move more rapidly, the time available to formulate action and response has become increasingly compressed. Climate change, population growth, urbanization, mobility, technology, and the forces of globalization have created an interconnected set of risks that are exerting increasing pressures on developed and developing nations alike.

Disaster patters are changing. For example, in the year 1800 the frequency of super storms the size of hurricanes Katrina and Sandy was nearly one every 400 years. By the year 2100, warming oceans and increased atmospheric moisture will produce one such storm every 90

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<sup>1</sup> The views represented in this paper are those of the authors, and do not represent the views of any organization.

<sup>2</sup> Jamie Self, “Did They all Get Out?” Gov. Haley Reflects on Hurricane Matthew, *The State*, October 15, 2016, Emergency Management. <http://www.emergencymgmt.com/disaster/Did-they-all-get-out-Gov-Haley-reflects-on-Hurricane-Matthew.html>

<sup>3</sup> NOAA National Centers for Environmental Information, “Billion-Dollar Weather and Climate Disasters: Table of Events. Reported in <https://www.theguardian.com/environment/2016/oct/11/hurricane-flooding-us-climate-change>

years.<sup>4</sup> As average temperatures in the western parts of North America have risen by a full degree Celsius over the last 30 years, the area damaged by forest fires has doubled in size and is larger now than the states of Massachusetts and Connecticut combined.

Chronic drought has produced rising death tolls and contributed to increased urban migration and social conflict in Syria, Sudan and elsewhere as water and resource shortages exacerbate ethnic and national tensions. In 2011 and 2012, more than 12 million people in the Horn of Africa were severely affected in what has been called the worst drought in 60 years. The United Nations projects that by 2025 half of countries worldwide will face water stress or outright shortages, and that by 2050 as many as three out of four people around the globe could be affected by water scarcity.

According to the World Disaster Report 2016,<sup>5</sup> since at least 2004 the forced upheaval and displacement of populations has represented the greatest source of disaster impacts globally. In 2014, for example, 59.5 million people were forcibly displaced in the world. Moreover, displaced persons are staying in host countries longer than in the past, challenging the capacities of the global humanitarian architecture.<sup>6</sup> More than 11 million persons have been forcibly displaced from the war in Syria alone, and estimates of the potential for additional forced migrations range as high as 1 billion persons by 2050.

The Zika and Ebola outbreaks highlight the evolving public health risks that globalization poses. The Ebola outbreak in West Africa, which began in 2014 and led to 11,310 deaths in Liberia, Sierra Leone and Guinea, spread as far as the United States.<sup>7</sup> The Zika virus quickly connected to other disease vectors and spread throughout the Americas. Destruction of wilderness areas will continue to combine with climate change, urbanization, and modern transportation to expand the spread of new diseases, facilitate the movement of known diseases to new areas, and contribute to the re-emergence of previously eradicated diseases.

The global spread of risk and uncertainty also includes vulnerabilities associated with transnational criminal networks, sophisticated human trafficking, terrorism and, increasingly, cyber insecurities. Information flows are revolutionizing change cycles, and social networks are shifting the ways in which people self-organize and mobilize. Increasingly, individuals and small groups of motivated actors are able to have impact, for both good and ill, at scale and speeds not previously possible. This can result in both immediate and long-term damages caused by direct human behavior. The shift we are witnessing in the nature of the transnational terrorism threat toward inspired, independent attacks offers a clear example of how these risks can tear at the social fabric of communities around the world, undermining institutional strengths and exacerbating the frailties of

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<sup>4</sup> <https://www.theguardian.com/environment/2016/oct/11/hurricane-flooding-us-climate-change>.

<sup>5</sup> International Federation of the Red Cross and Red Crescent Societies, *World Disasters Report 2016. Resilience: saving lives today, investing for tomorrow*. Geneva: Switzerland, [www.ifrc.org](http://www.ifrc.org), 2016.

<sup>6</sup> World Economic Forum, *The Global Risks Report 2016*, Geneva. <http://wef.ch/risks2016>.

<sup>7</sup> World Health Organization, 2016, as cited in IFRC, 2016, op. cit.

vulnerable people. The extraordinary rise of cybercrime as the world's most lucrative criminal activity offers another example.

These and other global drivers of change are troubling as separate trends, but of greater concern are the ways in which they increasingly overlap, interact, and become interdependent and mutually reinforcing. In combination, they can create unanticipated crises that are so complex that existing strategies and policies are no longer sufficient to afford protection or adapt to cascading consequences. Japan's 3/11 triple disaster devastated that country, killing more than 15,000 and leaving over 200,000 homeless, 4.5 million without power, and 1.5 million without access to public water systems. It also shut down truck production in Louisiana, caused a run on potassium iodide across the west coast of the United States, and affected energy policy in Germany. In Haiti, the damages from Hurricane Matthew added to the struggle to recover from an earthquake six years earlier that killed hundreds of thousands and nearly destroyed the nation's government. Like the earthquake, Matthew struck on the eve of a national election and disrupted hopes of ending pervasive violence and political turmoil. Today, Haiti suffers not only from chronic poverty and devastated infrastructure, but also a widespread cholera epidemic, and its citizens leave in large numbers for the United States, where many resettle permanently.

In 2010 the United States issued a new National Security Strategy that embraced the reality that even "as we do everything within our power to prevent these dangers, we also recognize that we will not be able to deter or prevent every single threat." The United States set forth the explicit goal of strengthening national resilience, defined as "the ability to adapt to changing conditions and prepare for, withstand, and rapidly recover from disruption." Six years later, bearing witness to the Christchurch earthquake, east African drought, Hurricane Sandy, Japan's 3/11, the Syrian crisis, Ebola outbreak, and many other crises, the need to focus on enhancing the resilience of our communities and of nations is more important than ever.

This chapter calls attention to several priority areas in this quest for future resilience. In particular, it focuses on the uncertainties and risks of the emergent global environment and on the strategic urgency that the compression of time has created. We focus on three overlapping issues. They are (1) the primary significance of resilience in global supply chains; (2) the transformation of regions and communities as the strategic focal points for resilience efforts; and, (3) the urgency of developing new forms of governance to lead resilience efforts.

Our core argument is that future resilience depends on the strength of physical, social and political connectedness, whether in local communities or on the broader international stage. The complexity of overlapping trends and recurring disruptions of environmental, economic, and human conditions needs to be met with a level of organization – institutional and social – that matches the risks that arise. Economic complexity in the form of vast global supply chains, for instance, calls for strategies of collaboration among diverse participants at each stage in the interlinked production, distribution, and service phases. No one entity can sufficiently control or protect the entire interdependent set of activities.

Local community resilience similarly requires a deeper level of connectedness, focused especially on including more, and more diverse, members. Stronger connectedness can strengthen social cohesion within and across communities, overcome the alarming decline in trust in government, and facilitate operational relationships among government, business, and civic actors that can meaningfully change outcomes in crises.

Acts of willful opposition and antagonism, whether by state actors or non-state actors, can pose direct threats to the security and resilience of communities, nations, and entire regions. The explicit motive of most terrorist attacks is, of course, to undermine faith and confidence of a population in its government – these are first and foremost an attack on social trust. Similarly, the activities of transnational criminal networks and blatant state-sponsored misinformation campaigns can directly undermine social cohesion within neighboring nations and communities and put vulnerable populations at risk.

Expanding and deepening economic, social and political connectedness is key to anticipating these and other future complexities and to strengthening the social resilience of communities and nations in the face of them. But this effort will require new forms of leadership and governance. Regional governance and cooperation mechanisms will likely be increasingly important. Nongovernmental groups, working across local jurisdictional borders and cultural boundaries, will likely be more effective than entrenched governments, both in mobilizing the actions needed to prepare and recover from emergencies, and in motivating citizens to act before it is too late.

### **Supply Chains and their Disruptions**

Since 2008, for the first time in human history more people lived in urban centers than in rural areas, where they are expected to reach 6.2 billion by 2050. Advancements in transportation and communications technologies have made this shift toward geographical concentration possible, enabling the massive movements of energy, food, water, waste, and commodities required by dense urban populations— often over long distances. In 1975, there were three megacities (cities with a population over 10 million); today there are thirty-five. The largest, Tokyo and Jakarta, each exceed 30 million residents. Megacities also comprise 42 of the 100 largest economic entities in the world, according to the Chicago Council on Global Affairs, up from 34 just six years ago.<sup>8</sup>

The density and complexity of supply chain networks that have emerged to support this growth defies measure. According to a Chatham House report on the 2010 eruption of Iceland's Eyjafjallajökull volcano, the globalization of supply chains has raised the likelihood of second or third order impacts that are hard or impossible to predict. Business interruption and supply chain risks consistently rank among the top global business risks, according to the Allianz Risk Barometer, and just-in-time delivery models for many key lifeline commodities (e.g., food, pharmaceuticals, medical supplies) have led to significant concentration in the distribution level of supply chains.

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<sup>8</sup> Noah Toly, "In the future, cities may finally solve problems that have stumped the world's biggest nations." *Quartz*, October 13, 2016.

This organizational and geographical concentration represents a strategic capacity that, in many circumstances, dwarfs the capacity of even the largest government organizations. For example, the Washington, DC metropolitan area consumes more gross tonnage of dry and frozen food every year than all non-fuel material moved by the U.S. military into Afghanistan and Iraq over thirty months between 2001 and 2004.<sup>9</sup>

Significant attention has been paid to issues concerning the security and integrity of multi-layered supply chains, and progress is being made. The most notable efforts seek to guard against the introduction of illicit and counterfeit materials into the supply chain, whether criminal or terrorist in nature. But comparatively less attention has been paid to how greater resilience can be fostered within these supply chains. For instance, the grocery supply chain in Japan's Tohoku region demonstrated considerable resilience after its March 2011 earthquake. But with a population over 9 million, the region benefits from its proximity to much larger food networks that primarily serviced the greater Tokyo and Osaka areas, with populations exceeding 42 and 22 million respectively. Precious little is understood about how these networks would have withstood a scenario in which the tsunami spawned by the earthquake had hit Tokyo instead of Tohoku.<sup>10</sup>

Supply chains are not bound by international or intra-state boundaries. They often operate in large regional networks surrounding dense urban areas that bear little relationship to governmental structures and jurisdictional boundaries. The density and interdependence of these networks, while facilitating resilience in the face of many risks, also gives rise to the potential for catastrophic degradation or failure of the lifeline supply chains that support these large populations. For government actors, replacing broken supply chains in the aftermath of crisis will be essentially impossible. A new focus is needed to better understand how government can mobilize support to, and work cooperatively with, private owners and operators of lifeline supply chains to redirect and restore capacity in the system in the aftermath of crises.

### **Regional and Community Resilience**

Whether supporting new forms of cooperation around supply chains or creating more localized efforts, resilience strategies will need to tackle a fundamental misalignment of established government jurisdictions and authorities and the shape and scale of complex risks. Hazards, for instance, clearly reach beyond regulatory boundaries and the purview of specific governmental authorities. Reflecting on the damage done from Hurricane Sandy in the United States, the U.S. Secretary of Housing and Urban Development acknowledged that "Natural disasters do not respect State or local boundaries, thus rebuilding plans cannot be bound by jurisdictional lines...A series of uncoordinated hazard mitigation measures may yield unintended consequences and could ultimately decrease resilience in the long-term."<sup>11</sup>

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<sup>9</sup> "Considering Catastrophe," Mid-Atlantic Supply Chain Resilience Project, 2014, pp. 31.

<sup>10</sup> "The Role of Groceries in Response to Catastrophes." CNA. 2016.

<sup>11</sup> U.S. Department of Housing and Urban Development, *Hurricane Sandy Rebuilding Strategy. Strong Communities, A Resilient Region. Report to the President of the United States*, August 2013.

New forms of cooperation will also need to reach deeply into the social structure and composition of local communities, reenergizing connections and even forming new networks that include more diverse members. These social connections may be at least as important as the large physical infrastructural investments that draw most public and private attention. Research on the earthquakes in Kobe, Japan, and in Christchurch, New Zealand, shows that focusing first on social connections in local communities to quickly reestablish social activity, including small businesses, schools, recreation and social life, sparks other forms of recovery and improves longer-term efforts.

Local social connectedness is also essential to anticipating how residents will step forward and mobilize before and in the aftermath of disasters, as both formal volunteers and informal, spontaneous supporters. In New Zealand, some of the volunteers who mobilized the “student army” were driven both by the immediate impact of an earthquake, and from a long-standing desire to contribute to their local communities. In the New York area, another spontaneous group formed out of the Occupy movement to turn the energy of earlier political protests into offers of valuable help to local communities hit hard by Hurricane Sandy.

The Dutch, Australian, and U.S. governments, among others, have sought to incorporate resilience activities directly into the mainstream of community life. The Dutch social investment strategy, for instance, emphasizes public-private partnerships in building flood preparations and cybersecurity protections within local communities. The U.S. “Whole Community” emergency management doctrine explicitly calls for establishing connectivity among different organizations, sectors, and activities within a region. In the aftermath of Hurricane Sandy, for instance, New Jersey’s Local Resilience Partnerships sought cross-jurisdictional collaboration with the New Jersey Recovery Fund as part of the effort of small voluntary associations from adjacent communities to build a bottom-up structure to share resources but also retain local control over land use decisions.<sup>12</sup>

The significance of these efforts is that they form the “social infrastructure” of resilience that serves as a necessary complement to the more familiar focus on physical infrastructure.<sup>13</sup> While governments and international organization direct their attention to large infrastructure projects, the social conditions associated with physical infrastructure often represent more challenging policy dilemmas. For example, population displacement is considered a high risk to security and stability not only because of the sheer size and pressure on resources, but also because it severely weakens long established social connections upon which communities, families, and groups rely for stability and survival. Population displacement may also raise unexpected risks to global supply chains and other economic activities.

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<sup>12</sup> Ibid.

<sup>13</sup> Robert L. Bach and David J. Kaufman, “A Social Infrastructure for Hometown Security: Advancing the Homeland Security Paradigm,” *Homeland Security Affairs*, Vol. V (No. 2), May 2009.

The upheaval millions of people from Syria is a case in point.<sup>14</sup> As many fled to Turkey to find a source of support and stability, large numbers, including children, found illegal work at various points in the garment industry production and distribution chains. According to various reports, garment production often begins with difficult and abusive conditions of involving illegal hand labor. Products made in these circumstances eventually reach top retail stores in London, Berlin, and elsewhere and can threaten brand reputational risk.

The displaced also are vulnerable to human trafficking, which according to recent investigations is deeply embedded in many supply chains. Industry estimates reach billions of dollars that may be linked directly and indirectly from activities connected with traffickers, illegal profiteers, and organized crime syndicates operating in otherwise legitimate supply chains. Until recently, the dominant approaches to combating human trafficking have relied almost exclusively on governments and social service organizations to eliminate these risks. Little has been asked of the private sector, but this is changing. Legislative actions in California and elsewhere are refocusing on corporate behavior and their responsibilities for the safety and security of their employees, including the vulnerabilities of workers displaced by disasters and conflict. Risk from these illegal activities now threatens some of the largest global companies.

## **Governance**

Innovations are clearly needed to find new approaches to working within and across jurisdictional and national boundaries to foster resilience in the face of today's global risks. New mechanisms, for instance, may involve regional, crossborder partnerships that combine authorities from different organizations, including governments, to operate more flexibly against widely distributed risks, including those from antagonistic actors, whether power-based, ideological, or criminal in intent. Regional capabilities could be invaluable to building resilience in the eastern Caribbean-Eastern U.S. coastal areas that now appear at severe risk of recurring super storms, sustained droughts, and new disease vectors. They are already indispensable to combatting the aggressive actions of criminal networks dedicated to exerting force against the legitimate authorities of the states through which their criminal activities pass.

Multilateral frameworks for regional governance represent one likely approach. For centuries nations have grappled with the complex and shifting challenges of conflict and national interests in an effort to manage shared risks and to pursue potential opportunities. Regional approaches to resilience have already taken form in Europe, organized by the European Union and NATO, and in the Caribbean region as a whole. For decades the United States used its regional alliances to counter Cuban opposition and expansionism, and in changing policy course, returned to a hemispheric-wide mechanism, The Summit of the Americas, to gain support. Much can be learned from these experiences, including their shortcomings.

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<sup>14</sup> <http://www.middleeasteye.net/news/fashion-brands-should-do-more-protect-syrian-refugees-turkey-factories-watchdog-414513207>.

In the United States, federal efforts to encourage state governments to use applications for grant assistance to align programs with the scale and scope risk profiles still stumble across jurisdictional requirements. Renewed efforts to encourage risk-based planning and collaborative program development are needed to expand capacities and strengthen future responses.

Within U.S. cities, new approaches are also needed to reach more deeply into local communities to mobilize diverse groups. Recent research on the collective efficacy of neighborhoods underscores this need. Public safety, for example, is enhanced significantly when community members are able to organize more inclusively, strengthen social cohesion, and assume collective ownership over neighborhood activities.<sup>15</sup>

A critical component of these local and regional innovations is an ability to turn recognition of shared risks into the social trust needed to bond residents and local institutions with governments, and bond governments with one another. Given the historically low levels of social trust in many nations, the governance challenge is clearly to build and maintain sufficient legitimacy with local residents to foster a willingness to work together. Fundamentally, resilience *happens* at the community scale, and the work to strengthen social trust and community capacity that can give rise to greater resilience happens at that scale as well.

Success in building resilience requires a shift in perspective toward consciously designing integrative policies that strengthen community values, vitality, and cohesion under stress through larger discussions of future opportunity, investment, and comprehensive governance. The instruments to achieve this shift already exist – they include strategic investment decisions, master planning, community development, social service delivery, and capital investment and infrastructure engineering, to name only a few areas. Most of these policy issues, of course, are rarely thought of first and foremost as resilience issues, instead they are often framed in the context of economic growth and job creation. Policy leaders will increasingly need to see the connections among, and comparative value in, these issue areas in ways that can reconceptualize how the existing pieces fit together and support one another. Becoming more integrated with wider policy agendas will require integration of natural hazards risk reduction with economic development policies, poverty reduction programs, and climate change initiatives.<sup>16</sup> Aggressive actions against a region also demand collective responses forged through greater cooperation and a recognition of shared responsibilities.

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<sup>15</sup> U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, *Neighborhoods and Crime: Collective Efficacy and Social Cohesion in Miami-Dade County*. NIJ grant 2009-IJ-CX-0039, [www.nij.gov](http://www.nij.gov).

<sup>16</sup> This discussion is taken from the authors' contributions to Robert Bach, ed., *Strategies for Supporting Community Resilience. Multinational Experiences*. Stockholm: CRISMART 2015. Participants from ten countries spontaneously organized an informal Multinational Resilience Policy Group to explore a wide range of policy leadership issues related to supporting local resilience. During six years of meetings, discussions, and community visits, they witnessed recovery in action, discussed local preparedness, and debated how national strategies and policies. The countries included Australia, Canada, Germany, Israel, New Zealand, the Netherlands, Singapore, Sweden, the United Kingdom, and the United States.

## Future Resilience

Although the concept of resilience often generates debates over definitions, it succeeds as a mobilizing idea. It has brought people and organizations together that do not normally interact, especially from diverse sectors, and connected them through a shared sense of interdependency. New players and organizations that have not typically been involved in security, emergency, and disaster policy and planning discussions are now “at the table,” and new thinking and activities are possible because of it.<sup>17</sup> This mobilization is effective because it enables diverse participants to organize, build strategies, and make plans at the same level of complexity found within natural and man-made risks.

However, in a world of disruptive challenges that have cascading impacts across increasingly interdependent networks, effectiveness also demands leadership skills that reveal an ability and a willingness to embrace complexities and foster adaptive strategies. As the Secretary of the U.S. Interior Department recently noted, “We can see that climate change is already impacting our nation’s national parks...It’s clear that one of the biggest challenges our national parks face in their second century will be adaptive management in the face of a changing climate.”<sup>18</sup> This same challenge exists in the face of dealing with willful opposition and antagonistic actors seeking to foment discord and disruption.

New efforts are needed to strengthen adaptive leadership abilities and institutional mechanisms to face the apparent chaos as these complexities unfold. The disruptions occurring simultaneously across the globe, and the growing connectedness between local challenges and distant events, may appear ungovernable. The rise of geographically dispersed nonstate groups with sufficient power and interest to attack innocents and affect nations, large pockets of chronic catastrophes, and the emergence of routine disasters out of supposedly rare events, to name just a few challenges, call for leadership perspectives that are both grand in vision and sensitively focused in local implementation. These new demands on leadership may be the greatest challenge to future resilience.

Much more attention is needed in both the public and private sectors to create greater institutional ability to recognize complex situations, flexibly pivot among different leadership approaches to match the context, and actively engage and support emergent groups and collective action. By and large, governments and aid organizations still rely on centralized, top-down, orders-driven operations. While such approaches work well for many day-to-day functions, they are unlikely to prevail in the chaos of future complex crises. Increasingly, public and private authorities will need to operate in areas where resource deployment must cover noncontiguous territories and the service and logistic delivery systems will involve dispersed uncontrolled activities. Supply chains will not be easily connected or reconnected, resources and responders will not be grouped together, and the groups needed to be involved may not be formed and may even contest the authorities of established organizations.

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<sup>17</sup> Ibid.

<sup>18</sup> Sally Jewell, quoted in <https://www.theguardian.com/environment/2016/oct/11/hurricane-flooding-us-climate-change>.

In this context, effective leaders will need to be self-starters with superlative critical thinking skills and a huge capacity for moral and ethical reasoning and decision-making. Many will operate in the absence of supervision and under intense pressures. Most of all, they will need to have the capability to establish and sustain trust. Recent criticisms of large aid organizations in recovery operations in Haiti and elsewhere demonstrate that even well-established organizations face leadership and trust challenges. The source of such criticism in the future will increasingly result more from the challenges posed by a restructuring of systemic risks, the limits of established authorities and the failure of leaders to adapt to innovative opportunities than by any specific individual or institutional mistake.

## **Recommendations**

Resilience offers a powerful organizing framework for knitting together disparate activities in a manner that can enhance social cohesion, vitality, and regional security. This is as important at the community level to grapple with the challenges of demographic change, population relocation, or disaster recovery as it is at the regional level to counter antagonistic actors seeking criminal gain or to foment discord, or to combat the spread of disease.

Although much needs to be done, several modest first steps would help push forward a discussion of strategies to support future resilience. They revolve around a core proposition: New forms of leadership and governance mechanisms are needed to overcome the limits that established institutions and government agencies face in supporting a future resilience agenda.

The following three examples offer thematic illustrations of a new leadership discussion.

A first example calls for a discussion of innovative mutual assistance mechanisms that cross national, state and organizational boundaries. In the future, the familiar refrain that “disasters know no borders” must be met with effective arrangements to support resource sharing across borders. As discussed earlier, even the most developed nations are not immune from increasing risks and their interdependencies and, despite their considerable capabilities, will need direct assistance from neighbors, allies, and sectors unused to cooperation. In the United States, for example, the projected impacts of a severe earthquake in the New Madrid Zone, or in the Cascadian Subduction Zone, will require operational responses that rapidly exceed available resources -- especially for highly specialized capabilities such as urban search and rescue.

Currently, the primary international mechanism to support resource sharing across borders is the United Nations’ humanitarian system, which operates as a supply-driven mechanism to channel aid from developed nations to less developed nations struggling with a disaster response. The system contrasts starkly with the mutual aid agreements in place within the United States and between individual U.S. states and their cross-border counterparts in Mexico and Canada. In those cases, disaster-affected areas can request the support of specific assets and capabilities (such as search and rescue) without political stigma and the

typical jurisdictional barriers associated with legal liabilities and compensation rules. These are worked out in advance as part of a formal mutual aid framework.

Leaders need to come together across various sectors and jurisdictions to work on mutual assistance agreements that establish regional or global standards and shared best practices. Although governments will undoubtedly be part of such regional agreements, they may operate best as partners and supporters of non-governmental lead organizations. Leaders must also reach and mobilize new communities that need to be part of resilience efforts but who have been absent in previous planning activities. Precedent exists for such agreements. For instance, the International Radiological Information Exchange standard established by the International Atomic Energy Agency might serve as a foundational brick in a new international mutual aid system for disaster response.

A second example calls for leaders to focus on regional planning frameworks that are needed to create shared approaches to resilience planning. As risks emerge in new ways and with greater intensity, existing international mechanisms do not match the scale and scope of resilience planning. The sustained nature of population displacement, for instance, and its connections to climate change and distribution of disease risks, challenge current international policy arrangements. Diaspora communities need opportunities to discuss their interests with a full range of leaders from regional organizations offering their assistance. Corporate leaders also need to plan how best to maintain connections with their workforce and support their well being, both for humanitarian reasons and to prevent risks to production or service stability. New or strengthened regional mechanisms for information-sharing, cooperative planning and capacity-building, and coordinated efforts to tackle transboundary issues such as human trafficking, can be powerful instruments for advancing the ability of nations to confront and persevere in the face of complex risks.

A third example focuses on the heightened pressures on new leaders and their skills. New opportunities are needed to create informal networks and learning exchanges that encourage participants to pursue ideas outside of their routine institutional frameworks. Government leaders need opportunities to speak directly with groups and individuals to pursue perspectives potentially inconsistent with current policies or the constraints of budget concerns. Leaders of aid organizations need opportunities to have informal, protected space to discuss opportunities and difficult choices with community members that may have very different interests and experiences. Private sector leaders need to be able to meet with colleagues who face similar issues but who may operate in different supply chain realities, with different government agencies, and various contexts of systemic risk.

In 2010, a group of governmental and non-governmental representatives from six countries met to begin an informal, unstructured dialogue seeking to understand how central governments can support greater community resilience. During six years of meetings, discussions, and community visits, participants from ten countries organized an informal Multinational Resilience Policy Group to explore a wide range of policy leadership issues related to supporting local resilience. They witnessed recovery in action, discussed local preparedness, and debated how national strategies and policies with dozens of community

leaders and local officials in more than half a dozen countries. Participating countries included Australia, Canada, Germany, Israel, New Zealand, the Netherlands, Singapore, Sweden, the United Kingdom, and the United States. The insights and lessons derived by this group manifested themselves in multiple nations' national resilience strategies and doctrinal frameworks. More such efforts are needed, in areas ranging from countering violent extremism to helping dislocated populations and communities grappling with the pressures of supporting them.

These three examples highlight the implications of a future resilience agenda on leaders. They will be involved much more than before in supporting creative physical investments and the technological advances that have become so valuable to how the world organizes against both manmade and natural risks. But in the end, they must also be deeply involved with people and the institutions and affiliations they form, including regional groupings that involve different traditions, interests, and needs. Effective leadership at this scale hinges on social trust. Building and sustaining such trust requires informal governance and leadership efforts to strengthen social cohesion where it may be possible and to create connections where they do not exist. Only then will future generations have a fighting chance to thrive in a complex and risk-filled world.