Global Interdependencies

Long-term Trends and Drivers and Their Implications for Emergency Management

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Overview

In recent decades, globalization has raised socioeconomic conditions in many nations while creating new global interdependencies that will influence emergency management in the U.S. and worldwide. These growing political, economic, technological, and social interdependencies are evident in the following changes:

- Rapid global economic growth
- Industrial development of non-OECD nations
- Interlinked global supply chains
- Increased worldwide awareness
- Increased media reach and individual power

In April, 2010, several members from the Strategic Foresight Initiative (SFI) community gathered to develop a list of issues, factors and trends ("drivers") that could drive change in emergency management throughout the next seven years. This document contains preliminary research conducted on behalf of the Strategic Foresight Initiative on the Global Interdependencies driver. This research is intended to serve as a discussion point for further discussions, and does not represent a forecast by the Federal Emergency Management Agency (FEMA). This paper is a starting point for conversations around a highly complex topic, and SFI encourages feedback about this paper from the emergency management community.

SFI is a collaborative effort of the emergency management community that is being facilitated by FEMA. SFI was launched so the emergency management community can seek to understand how the world is changing, and how those changes may affect the future of emergency management. It will do so by encouraging members of the community to think about how the world may look over the next 15 years, and what steps the community should begin taking to thrive in that world. Participants in SFI include emergency managers at the Federal, state, local, and tribal levels, subject matter experts on relevant topics, and other stakeholders.

Anybody who would like more information about SFI should contact the team at FEMA-OPPA-SFI@fema.gov.

Key Trends and Drivers

Global GDP and worldwide living expectations have increased greatly. From the outset of the twentieth century global GDP rose from $2 trillion to $36 trillion,[1] a 2.7 percent annual increase.[2] Due in part to industrialization, the world experienced – and has come to expect – rapid economic growth. GDP per capita rose from approximately $1,000 to $6,000 from the beginning of the twentieth century.[3] This sharp growth in wealth contributes to societal development in areas like universal education, literacy, life expectancy, and overall life quality.[4]

The gap is shrinking between the Organization for Economic Co-operation and Development (OECD) and non-OECD nations. In 2000 the poorest 70 percent of the world's population had 10 percent of global GDP. By 2050, the Lorenz curve forecasts that the GDP share of these nations will increase to 25 percent.[5] In addition, the amount of time required for a country to shift from an agrarian to an industrial or service-based economy has decreased.[6] Past developments in human capital, governance and technologies make it possible for countries like China to "leapfrog" past developed nations in certain areas like energy and infrastructure innovation.[7,8,9] According to the World Bank, the absolute gap in GDP between OECD and non-OECD countries shrank rapidly in the last half century.[10] Yet, non-OECD countries contain populations six times greater in size[11] and are expected to grow 3 to 4 percent annually[12] resulting in low per capita GDP.[13] The absolute GDP of developing nations is growing faster than that of developed nations[14] and is estimated to continue growing at 6 percent annually compared to 2.4 percent in the developed world.[15,16]

Global financial flows, multinational companies, and worldwide supply chains create interdependence.
For the majority of the twentieth century, foreign trade accounted for about 10 percent of the U.S. GDP. That number has now risen to approximately 25 percent.[17] With foreign trade and other financial linkages has come greater susceptibility to economic instability in other countries. The 2008 financial crisis was a dramatic example of this, as problems in the U.S. housing markets spread rapidly to Europe and impacted China's export economy.[18,19] Maintaining stable economic growth requires careful coordination with foreign governments, most notably in the case of the United States and China, where trade imbalance and debt burdens link the nations' economic futures.[20] As the global economy grows, multinational companies also play an increasing role in maintaining the stability of international and domestic markets, running operations across different continents and controlling flows of money, goods, and services. In the United States, multinational companies provide a disproportionate amount of GDP growth. Comprising less than 1 percent of all U.S. companies, they provide 74 percent of research and development spending. In 2007, they accounted for 23 percent of private sector GDP, having grown 31 percent since 1990.[21] Companies are increasingly sourcing raw materials and components from other nations and shipping products to markets around the world. Crises like the 2011 Japanese earthquake and tsunami indicate that as dependence on global supply chains grows, disasters have the potential to produce much wider economic impacts than has traditionally been the case. After the earthquake, Apple Inc. faced concerns about its ability to produce the iPad2 due to its reliance on component parts manufactured in Japan.[22,23] Post-

disaster shortages of key auto parts from Japan also forced car companies like General Motors to slow or suspend operations at U.S. plants.[24]

Intergovernmental organizations (IGOs) and international nongovernmental organizations (NGOs) grow in number and impact. International organizations currently number more than 50,000, up from 1,000 in 1980,[25,26] addressing world issues like climate change, resource management, and human rights. Forums like the World Summit on Sustainable Development mark how the global community is committed to a specific set of goals to improve the human condition.[27] And initiatives like the UN Millennium Goals have been successful in some areas like universal education and gender equality. Yet, significant progress remains to be made in other areas like eradicating extreme poverty and hunger.[28] These intergovernmental and nongovernmental organizations have demonstrated their capacity to implement solutions on the world stage, but the global problems they face are persistent and daunting in their scope and complexity.

Technology has opened new funding sources for international relief efforts. Close worldwide attention to disasters like Hurricane Katrina and the Chilean earthquake demonstrate the world's inclination to help beyond their immediate environment in disaster relief efforts. Social networking technologies provide new tools to reach potential donors. For instance, in the aftermath of the 2010 earthquake in Haiti, the Red Cross raised $5 million of the total $35 million dollars in immediate donations through their "Text Haiti" campaign.[29]

Implications for Emergency Management

Increased global interdependence could have many implications for emergency management. Continuing global economic growth would provide governments around the world with greater resources to spend on emergency management, including infrastructure, services, and technologies that increase their capacity to respond to disasters. Economic growth could also raise the living standards of many individuals and communities, increasing their resiliency to disasters. On the other hand, if development continues to concentrate in coastal areas, this economic activity and the communities which support it may be vulnerable to storm activity as well as sea level rise under a climate change scenario.

Ongoing growth in the economies and geopolitical stature of non-OECD nations could change the emergency management context for the United States both internationally and domestically. If countries like China and India leverage greater financial resources to engage more abroad, they might take over the United States' leading role in providing direct assistance and financial aid after disaster events overseas. Such shifting roles, particularly around large events like the Haiti earthquake and Indian Ocean tsunami, could have geopolitical significance well outside the emergency management sphere. As countries like China, India, and Brazil look outside their borders to fuel their growing economies, competition for resources could affect the U.S. emergency management community alongside the wider economy.[30] If higher competition from non-OECD countries hinders economic growth in the United States, federal, state, and local budgets may suffer, limiting the funds available for emergency management.

Increased linkages in supply chains and communications between the United States and other countries around the world could broaden the economic impact of even localized disasters. Reliance on overseas manufacturing of products critical to emergency response could hamper U.S. emergency managers' ability to respond to domestic incidents. As flows of information, products, people, and ideas between nations increase, international disasters may have greater impact within the United States. For example, the 2010 eruption of the Eyjafjallajokull volcano in Iceland wreaked havoc on international air travel,[31] and the 2011 Fukushima nuclear disaster in Japan has profoundly influenced Germany's national debate on energy policy.[32] In the other direction, domestic emergency responses in the U.S. may carry a higher international profile, as in the case of Hurricane Katrina, which received much foreign media coverage and has contributed to an ongoing international knowledge exchange around flood management.[33] Such linkages would provide valuable opportunities for learning but might also require U.S. authorities to have a greater capacity to communicate to both domestic and international audiences about situations developing in different areas of the globe. Increasingly globalized impacts and media coverage could require U.S. civilian and military assets to engage more often on disasters around the world, with significant effects on emergency managers' resources and their readiness to respond to domestic events.

Correlation to Other Drivers

- **Evolving Terrorist Threat:**
  Changing geopolitics could mean that some sources of terrorism subside while new threats emerge. Greater reliance on a digital and globalized media and communications system could create new opportunities for attacks with widespread impacts. Interlinked supply chains and greater worldwide awareness could allow even conventional terrorist attacks to have global implications for economies and emergency management capabilities.

- **Technological Innovation and Dependency:**
  Technology is reshaping our ability to connect across long distances and while in motion. As the ways we communicate and build our identities change, new communities may take shape that do not necessarily reflect international borders, much as multinational corporations have forced a rethinking of the place of nation states.[34] Emergency managers may need to engage with such communities even where they do not map neatly onto physical jurisdictions. Technology may also impact the delivery of services needed in an emergency response, as in telemedicine, wherein individuals may receive medical care from across borders much as some Americans order prescriptions from Canada today and law firms outsource routine work to India. There could also be greater awareness of disasters and demand for information globally due to greater linkages.

- **Critical Infrastructure:**
  Greater global interdependence will have significant economic implications in the United States, affecting budgets for maintenance of infrastructure. The recovery of the U.S. economy is deeply connected to the health of economies in Europe and Asia as well as the

broader context of international trade. As non-OECD economies strengthen, the U.S. could receive increased foreign investment in areas including transportation, energy, and communications infrastructure. This foreign involvement could require a greater federal role in ensuring the security of these systems where they are essential to maintaining basic services and responding to emergencies.

Conclusions & Questions

- **Countries like China and India will likely wield more power in the future.** Will new global leaders allocate a greater percentage of funds to international emergency management? Will they be more self-sufficient in responding to disasters? How could this effect the United States' role as a leader in foreign assistance?

- **Ease of involvement by the global individual has increased.** Will this trend persist? If so, how will emergency managers' use new technologies to involve individuals on a worldwide level?

- **Emergency events may increasingly have global implications.** How will the effects of disasters ripple out through global supply chains? How might the U.S. and international publics respond to disasters in a more globalized media and communications environment?

- **The security picture may shift as geopolitics and technology interact in a globalized world.** Will terrorists find new weaknesses in our dependence on interlinked digital networks? Will the significance of terrorist attacks change in a more interdependent world?

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