Communicating Natural Risks of Developing Countries … and More

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Abstract

GHI communicates natural risks by describing the risk in lay terms, specifying feasible and politically attractive risk reduction actions, and relying on the advice of a multi-disciplinary team comprised of local and international experts. The earth sciences can gain public support if they address important social issues. Four important social issues that can be addressed by the earth sciences professional societies are: (1) investments in pre-disaster mitigation and preparedness are disproportionately small compared to investments in post-disaster reconstruction and relief; (2) natural disasters are often attributed to "Acts of God," rather than to "Inactions of Man;" (3) there is no existing organization responsible for or capable of tackling natural risks, globally; and (4) U.S. earth scientists need experience working abroad to be fully functioning participants in tomorrow's global economy.

Effective Communication Techniques

For the past 15 years, our focus at GHI has been on communicating to the public and government officials of developing and developed countries the following message: "Natural disaster risk is rising rapidly, particularly in developing countries. Managing that risk is important for developing and developed countries alike. There are affordable, effective things that can be done." The techniques we have used to communicate this message include:

1. We describe a community's earthquake risk with the use of an earthquake "scenario," which is an elaboration in lay terms of the effects – deaths, injuries, fiscal losses, and societal disruptions caused by the recovery and reconstruction processes—on that community of a hypothetical repeat of an actual earthquake that affected the community in the past. A more scientific description of the community's risk might be, for example, the peak ground acceleration that has a 10% probability of being exceeded in that community in the next 50 years. Such a description, while being scientifically more rigorous than an earthquake scenario based on a past event, does not, in our experience, communicate as effectively as an earthquake scenario.

2. We accompany the description of a community's earthquake risk with a description of feasible, politically attractive actions that could reduce that risk. The messenger is much more likely to be ignored (and, perhaps, shot) if he only says "your city is in deep trouble" than if he says "your city is in deep trouble, but here are some of the affordable, effective things you can do about it." In our first project, we divided our project resources between developing the earthquake scenario and the developing risk reduction actions in a ratio of 9:1; now, that ratio is reversed. What makes community leaders implement risk reduction actions depends less on the accuracy of the risk specification and more on the economic, political, and cultural feasibility of the risk reduction measures recommended. We unabashedly seek *politically attractive* risk mitigation options. Some scientists may feel they are stooping if they do so, and that their job is only to report the facts and let others make the policies. We have found that it is necessary for the person assessing the risk also to take the next step of developing a list of politically attractive and effective risk mitigation actions. This is particularly true in communities of developing countries, which are struggling against the "common enemies of man: tyranny, poverty, disease, and war itself." Even for them, politically attractive options *do* exist. For example, if an affordable means can be proposed to increase, tangibly, even by just a small amount, the safety of people, particularly children, our experience is that the public and the government will strongly support that proposal. Every politician would like to say something like: "Being concerned about the safety of our community's children during earthquakes, I initiated an assessment of the seismic safety of our schools. I learned that our schools are, in fact, vulnerable, but that effective, affordable means exist to make them safer. I am proud, therefore, to announce today the creation of Palookaville's School Earthquake Safety Program."

3. The assessment of a community's risk and risk reduction options is made by a multi-disciplinary team, comprised of local and international experts. Involving a community's civil engineers, scientists, business people, urban planners, medical care providers, public utility administrators, government officials and elected officials provides the possibility of understanding both the breadth of the social, economic and political consequences of an earthquake on a community, and the most promising risk reduction options. Involving *local* experts in making these assessments starts the essential process of forming the team that will implement the recommended risk reduction actions. Having *international* experts provides (presumed) objectivity: their recommendations will not be feathering their own nests.

Increasing Public's Appreciation and Support of the Earth Sciences

In order to increase the public's appreciation and support of the earth sciences, we need to identify issues that are important to the public that the earth sciences can address, and then successfully address them.

Important Issues for the Earth Sciences Professional Societies to Address

I would like to propose for consideration the following four issues that I believe are important and that could be addressed by the earth sciences:

1. **Investments in pre-disaster mitigation and preparedness are disproportionately small compared to investments in post-disaster reconstruction and relief.** I propose that the earth science professional societies advocate a new policy in which, for example, 10% of all US government funds that go to relief and recovery of a foreign or domestic natural disaster would be directed to research, preparedness and mitigation of natural disasters. This would be good for communities vulnerable to natural hazards, good for research and development programs, and good for US foreign policy. Funding mitigation and preparedness would be an efficient way to reduce the consequences of future natural disasters; a recent study by the US Multihazard Mitigation Council found that US hazard mitigation activities have a benefit-cost ratio of about 4. My proposed policy would stimulate scientific and engineering research and development of better methods of disaster mitigation. And finally, such a policy would mean that US-supported workers would be visible helping vulnerable foreign communities for the long term, not just in the immediate aftermath of a disaster, when the US's contribution may be lost in the chaos and multitude of other relief agencies. Last week I read that in 2005, DFID announced that 10 per cent of funds spent on disaster relief will be invested in initiatives to reduce the impact of disasters. The announcement ended with the statement: *"We hope that this very important initiative will serve as inspiration for other cooperation agencies and Governments!"* The U.S. should follow suit.

2. Natural disasters are often attributed to "Acts of God," rather than to "Inactions of Man." All too often, from New Orleans to Islamabad, natural disasters are described as being acts of God, implying that there is nothing we humans can do to prevent them. This is convenient, but, science teaches us, untrue. I'm not proposing another International Court in the Hague to point fingers and declare guilt, but at the same time I don't want the wrong Person blamed. Educating the public and government officials to distinguish among hazard, vulnerability, and risk might be considered a responsibility of the earth science community. Placing the responsibility where it belongs would focus attention on where the solution lies: better application of earth sciences and engineering to public policy.

3. There is no existing organization responsible for or capable of tackling global earthquake risk. This may come as a surprise, because we have such organizations as the UN's International Strategies for Disaster Reduction, the International Union of Geology and Geophysics, the International Union of Geological Sciences, as well as many governmental and nongovernmental organizations involved in international natural risks. None, however, is actually *responsible* for reducing and managing this risk. Conferences and workshops on natural risks routinely recommend that these risks be reduced, but no organization says by how much, by whom, and by when. None monitors progress. What organization with technical competence vigorously lobbies for more investment in preparedness, prevention and mitigation? I'm not sure precisely what

would be the best form of the needed organization. The Seismological Society of America and the Earthquake Engineering Research Institute are experimenting, however, with one approach that might be of interest. They are helping to establish an "International Partnership of Earth Science and Earthquake Engineering Professional Associations," whose purpose is to foster activities that the national and international earth science and earthquake engineering professional societies can *jointly* undertake to influence public policy and advocate seismic safety, in order to reduce earthquake losses.

4. U.S. earth scientists need experience working abroad to be fully functioning participants in tomorrow's global economy. There are jobs abroad for U.S. earth scientists and geotechnical engineers with U.S. and foreign-owned private firms, with U.S. and international governmental organizations, and with U.S. and foreign nongovernmental organizations working in such fields as international development and natural disaster preparedness, recovery and reconstruction. But today, an employer wishing to hire someone for one of these jobs faces the choice between someone with a good education in earth science and someone with experience working abroad. A fresh M.I.T. grad or a Peace Corps veteran. Because working abroad, particularly with governments of developing countries, is so different from working in the U.S., U.S. grads would be better qualified for these jobs, and would be more sure they actually wanted such jobs, if they could have foreign work experience as interns or apprentices. Taking summer vacations abroad, attending technical conferences outside the US, or visiting foreign research labs for a summer is not sufficient. Exchange programs between U.S. universities and foreign universities may develop international contacts and teach how research is done in foreign countries. But the difference between foreign academic research and US academic research is small compared to the difference between, say, how earth science is practiced in the private sector in developing countries and how it is practiced in the U.S. private sector. The difference between how earth science is applied to public policy in developing countries and how it is applied to public policy in the U.S. is even greater. If U.S. earth scientists are to play an important role outside the U.S., as they could and should, we need to develop opportunities for U.S. young professionals to have work experiences abroad.