

Working Group  
on  
Mitigation  
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IIASA

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1. What are the emerging technologies that will impact on earthquake risk mitigation in the next decades?

There are many emerging technologies to mitigate earthquake risk for buildings and equipment, e.g. the integrated electronic-based information and communication systems, building retrofitting techniques based on active-controls, rescue equipments, etc. However, we feel that it is utmost important to make sure that the equipment and technologies would be fully tested and hence reliable when needed. Joint industry efforts to develop such technologies between various organizations and countries should be particularly encouraged to share the technological benefits for all human mankind in seismically active areas. In order to ensure the continuity of lifelines and equipment for emergency and essential industrial facilities post earthquake, it is also a good strategy to maintain redundant lifelines and equipment should they prove to be economically justifiable.

2. How should responsibility for mitigation be shared between individuals and state?

Individuals are responsible for their own safety. They will reduce their own risk based on private benefit and cost considerations as well as their risk preferences. However, there are external benefits and perceived costs of earthquake risk reduction that are outside of their considerations due to such familiar reasons as asymmetric information, principal-agent problem, low probability/high consequence events, uncertainty, rent seeking, public goods, etc.

Therefore, the state should be responsible for providing earthquake risk mitigation services on all public assets. For man-made capital, the state should enforce compliance with building codes for buildings and

infrastructures, enforce adherence to land use plans, and assess regional seismic risks. In addition, the state should invest in social capitals and human capitals by educating people about the earthquake risks, making information easily accessible. But most importantly, the state investment should aim at enhancing the efficiency of government and corporate worlds, cracking down corruptions among government employees and developers using various means such as legal system, independent third parties, media, NGOs, etc.

### 3. How can mitigation be coupled with insurance?

Basically, earthquake insurance should be linked to the safety/risk characteristics of buildings or infrastructures and the potential of business interruption aspects that are the consequences of individual and governmental mitigation efforts with respect to the regional seismicity.