Mitigation and Risk Reduction

Name

Institution

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**Question 1**

In over its 5,000 year-long history, China has faced many natural disasters that have dealt devastating blows to the country. Due to its highly seismic network, china is prone to earthquakes. Despite experiencing magnitude five or fewer earthquakes regularly, China has also experienced devastating earthquake attacks such as the 1556 Shaanxi earthquake, the Tangshan Earthquake, the 1920 Haiyuan earthquake, and the 2008 Sichuan earthquake. These over 7-point magnitude earthquakes not only left economic damages in their wake but a devastating loss of lives. To better prepare and mitigate the disastrous impacts of earthquakes, China has put in place several mitigation measures.

First, China has constructed a legal framework to mitigate the disaster. China has enacted several laws and regulation-totaling 30 since 1980, to manage and prevent disasters (Lixin et al., 2012). Some of the laws that directly impact earthquakes are the Emergency Response Law, Earthquake Disasters Protection and Mitigation laws, and regulations stipulating the Handling of Destructive Earthquake Emergencies, among other environmental protection laws and regulations.

Secondly, China has a Disaster Prevention Action Plan and Institutional set-ups that mitigate disasters. The Chinese government has been proactive in mitigating the effects of disasters by developing strategies that target local and national levels. In its "China's Agenda 21," the government acknowledged the relationship between environmental protection and disaster management (Kang, 2015). This resulted in China’s Disaster Reduction Plan(1998-2010). The Plan highlights the goals and ways of reducing disasters. The plan is updated regularly as it has both long and short-term goals. Short-term plans account for up to five years, while long-term plans account for ten years. On the other hand, institutions empowered with systems such as Disaster information release system, Disaster emergency response system, Disaster early warning system, a reserve system for relief materials, a mechanism for information sharing, consultation, and rescue in case of major disasters, a mechanism for joint relief coordination, and a mechanism for public mobilization in cases of disaster emergencies work collaboratively to mitigate the adverse effects of disasters.

Thirdly, China has employed several measures that enhance its disaster-reduction capabilities. Some of the measures include embarking on Disaster-reduction Projects such as improving housing and building resilience to meet the earthquake withstanding standard (Lixin et al., 2012). Construction of earthquake-proof buildings and facilities and Highway disaster prevention projects. Another measure that china has employed in mitigating disasters is Developing a Three-dimensional Monitoring System to enhance its monitoring, forecasting, and early disaster warning capability.

Additionally, China uses disaster monitoring systems to monitor the land, ocean, space, air, and ground. It achieves this through systems that monitor Geological disasters, monitor and forecast earthquakes, and a Disaster remote-sensing monitoring system (Olson & Wu, 2010). China can effectively monitor and predict disasters to enable them to mitigate their effects by enhancing their preparedness.

Fourth, China has established Emergency Rescue and Disaster Relief Response System, which substantially Improves its Emergency Handling Capabilities. This system immensely improves China's capabilities in emergency handling as it has an emergency fund appropriation mechanism, emergency response mechanism, and rescue team system. All these acts support disaster management through emergency rescue, daily help, epidemic prevention, transportation support, and sanitation.

Fifth, to improve its disaster relief personnel's quality, China has established a Personnel Training System to educate its disaster relief personnel. Awareness is vital in disaster management, and China embarks in disaster prevention and reduction personnel training and increasing citizen awareness through a national education system. Through practical training, the Chinese government empowers its citizens to participate in disaster prevention and reduction. Given the numbers of citizens-1.2 billion, proper education of these citizens is an asset when hit with a disaster.

Lastly, china's international cooperation in the reducation and prevention of disasters is an asset in mitigating its disaster as the international community provides essential support in mitigating disasters. China has engagements with most of the UN's disaster-reduction programs such as UN International Strategy for Disaster Reduction, UN Office for the Coordination of Humanitarian Affairs, UN Economic and Social Commission for Asia and the Pacific, UN World Food Program, the UN Development Program, among others. Cooperation in these organizations provides China with adequate resources in its disaster-reduction initiatives.

**Question 2**

China seems to have implemented most of the preplanning measures. However, most of their decision-making models may be inefficient in times of uncertainty. It relies on the decision-makers to strike a balance between multiple criteria and a myriad of alternates. Despite the model's efficiency in normal operating conditions, it may prove ineffective in disasters where developments are unexpected and time is inadequate to gather data before considering tradeoffs.

Therefore, one additional measure that is yet to be implemented and may be vital in aiding preparedness in decision-making is the use of prediction markets. Prediction markets will offer a unique focus best suited for the uncertainties of disasters. It is based on the knowledge of several interdisciplinary individuals, none of who is entirely versed with disaster management but who in aggregate offer broad insights. The accuracy of prediction markets has been proven before predicting elections or product demand and might be successfully implemented to predict natural disasters.

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Therefore, one additional measure that is yet to be implemented and may be vital in aiding preparedness in terms of decision-making is the use of prediction markets. Prediction markets will offer a unique focus best suited for the uncertainties of disasters since it is based on the knowledge of several interdisciplinary individuals. None of who is entirely versed with disaster management but who in aggregate offer broad insights. The accuracy of prediction markets has been proven before predicting elections or product demand and might be successfully implemented in predicting the magnitude of natural disasters.

**Question 3**

Before updating China’s mitigation strategy, the following have to be considered:

Mitigation goal validation: after assessing China's mitigation strategy, there is a gap for better decision-making frameworks. The current framework puts too much pressure on the decision-maker in times of too much uncertainty. This strategy will be pivotal in addressing the vulnerability of populations and communities and China's asset vulnerability. It offers a decision-making model that makes it easier for the decision-maker to make critical decisions in a time of uncertainty.

Review, evaluate, and update existing mitigation actions. There is a need to constantly update the current mitigation actions since new data and methods come to light to enable better disaster preparedness. In addition, hazard impacts, mitigation goals and capabilities, and objectives may fluctuate over time (FEMA EMI, n.d.); thus, China may have to work harder to realize new mitigation actions for its 2021-2025 Action Plan.

Identification of any new mitigation actions: the further mitigation action with the potential to improve China's mitigation strategy is the use of prediction markets. However, for efficient collaboration in implementing this action, since it incorporates different agencies and entities, there will be a need to include it in the action plan. Integrating it in the action plan will provide stakeholders with important timelines, goals, and targeted hazards.

Identifying funding sources: Determining funding sources is essential as it increases the likelihood of states to fund the action when funds arise. If it were to be supported by FEMA, this mitigation strategy would be financed by the Hazard Mitigation Grant Program (FEMA EMI, n.d.). However, this strategy can be funded by the different institutions that deal with disaster management for the Chinese government. It relies on individuals from various institutions to form an interdisciplinary approach. Before updating China’s mitigation strategy, the following have to be considered:

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