

## EXECUTIVE SUMMARY

Natural disasters, whether they occur in advanced or developing nations, can destroy people's livelihoods. Extreme natural and man-made events have recently hit both developed and developing countries. We see vividly the devastating and still ongoing 2011 earthquake, tsunami, and nuclear radiation crisis in Japan that has killed tens of thousands of people and resulted in damages of around US\$200 to 300 billion. Hundreds of thousands of lives were lost in the Indian Ocean tsunami, Hurricane Katrina, and the earthquakes in central Chile, Haiti, the Sichuan province of China, northern Pakistan, and the Hanshin area of Japan. Disasters are created not only by nature but also by humans. The tsunami disaster in Tohoku was accompanied by a serious technological disaster involving a nuclear power plant's leaking radioactive matter. Economies around the world are still being impaired by the global financial crisis triggered by the 2008 Lehman Shock. Nations in Africa are still at war and involved in conflicts, and terrorist attacks are having serious impacts even on advanced nations. Natural and man-made disasters show distinct trends across the globe: Natural and technological disasters have been increasing more rapidly in frequency, in terms of the average occurrence of disaster per country per year, than financial crises and violence-related disasters.

As we continue our ceaseless efforts to recover from different disasters around the world, we are rediscovering the importance of advance preparations, such as drawing up emergency plans, disseminating and teaching emergency knowledge, conducting evacuation drills, constructing early warning systems, and investing in infrastructure.

Investments in physical infrastructure have been and will be indispensable as an ex ante risk management policy in strengthening resilience of individuals, households, communities, and a country. These investments include dams for flood control, seawalls and tsunami barriers, cyclone shelters, a barrier to control soil erosion, irrigation systems for droughts, earthquake-resilient houses and buildings, and disaster early-warning systems. Experiences of developed nations in the region such as Japan tell that investments in infrastructure dramatically reduced human and

physical losses due to natural disasters. Multilateral and bilateral development partners can play an important role in filling the investment gap in these disaster-mitigation infrastructures in developing Asian countries.

While advanced nations can deal with a major disaster by managing their own domestic financial resources, developing nations, which carry diverse risks of major disasters, have weak fiscal groundwork and are less tolerant of such risks. Different disasters come in combination, as was the case with the Great East Japan Earthquake and conflicts in Africa. There are a few emerging innovative ideas to strengthen the complementarities among the market, the state, and the community in the context of disaster management and coping.

It is imperative to develop formal mechanisms to diversify aggregate disaster risks at national and regional levels. We may need to elaborate on multi-country risk pooling schemes, i.e., regional funds, to cover sovereign disaster risk. Against natural disasters, regional level index insurance such as the Caribbean Catastrophe Risk Insurance Facility (CCRIF) and the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) can function effectively to support the disaster affected country with immediate liquidity in the aftermath of a catastrophic disaster, by using the insurance mechanism in addition to microcredit and microinsurance schemes to enhance the disaster resilience of individual households and firms. While regional index insurance schemes are based on public-private partnership (PPP), the microcredit and insurance programs are supported by informal community enforcement mechanisms. Complementarities among the market, the state, and the community will therefore be vital.

In the case of economic disasters in Asia, the Chiang Mai Initiative Multilateralisation (CMIM) has been and will continue playing an important role. The CMIM is a bilateral or multilateral currency swap arrangement involving pooling foreign exchange reserves, and was designed as an ex post coping mechanism in case of a financial crisis. Further development of Asian bond markets will also be indispensable, because bond markets are composed of a large number of individual bond holders, enabling idiosyncratic risks to be diversified away effectively, and it is generally considered that bond markets provide effective risk-sharing mechanisms. In order to diversify the shocks caused by disasters,

developed bond markets can potentially play an important role.

To further improve national and regional risk management capabilities, a global system of pooling the risks of the four types of disasters would be effective for both developing and advanced nations wishing to diversify the risks of disasters. In other words, we should also work on the securities and reinsurance markets to develop a global disaster insurance system that would encompass various regional frameworks such as CCRIF, PDRFI, and CMIM beyond disaster types, i.e., natural, technological, economic, and violence related disasters.

When we consider the actual form of such a system, there are numerous issues involved. It is not clear, for example, whether it would be an institutionalized system such as a disaster fund, or something more flexible such as a coordination forum. Yet the Asian region has experienced diverse forms of disaster, including floods, typhoons, earthquakes, epidemics, and the financial crises of the late '90s. It is worth pursuing reforms that undertake comprehensive preparations against the risks of a variety of disasters in Asia.