CASE STUDY 8: An Atlas of Hazards and Disaster Risks to Support Disaster Risk Reduction in China

If the country is to introduce and maintain effective and appropriate disaster risk reduction, it must first understand the temporal and spatial patterns of the hazards and disaster risks it faces.

The problem

Covering 9.6 million square kilometres, and with the largest population of any country in the world, China frequently experiences a variety of hazards resulting in great casualties, economic losses and damage to infrastructure.

The science

In response to the inauguration of the United Nations’ International Decade for Natural Disaster Reduction in 1989, the Chinese government launched a project to produce an Atlas that integrates the vast array of scientific data on natural hazards and disaster risks available in China.

Data for the Atlas was systematically identified from a national database of natural hazard related disasters, official government statistics, and from newspapers and other media sources. Collated data was validated by scientists then brought together for spatial and temporal analysis of hazards, exposure and vulnerability in a comprehensive risk assessment process. This allowed disaster risks to be quantified, prioritised and communicated in an accessible, meaningful manner using learning from risk communication science.


The application to policy and practice

Since 1997, the Atlases have been used in the development of the Chinese Government’s National Comprehensive Disaster Prevention and Reduction Plans.

For instance, analyses in the 2003 Atlas of Natural Disaster System of China, highlighted the regional variation of natural hazards across China and the projected trends of these (Figure 1). As a result, the

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3 UNISDR. Disaster Reduction Mandate [web page]. Available at: http://www.unisdr.org/we/inform/resolutions-reports/disaster-reduction-mandate [accessed 21 March 2013].
7 UNISDR. Disaster Reduction Mandate [web page]. Available at: http://www.unisdr.org/we/inform/resolutions-reports/disaster-reduction-mandate [accessed 21 March 2013].
9 The Chinese government launched a project to produce an Atlas that integrates the vast array of scientific data on natural hazards and disaster risks available in China.
National Plan for Comprehensive Disaster Reduction

During the “Eleventh Five-Year Plan” \(^\text{12}\) introduced more regionally-focused plans and activities for disaster risk reduction in China.

In 2011, the *Atlas of Natural Disaster Risk of China* \(^\text{13}\) was similarly used in the development of the plan for 2011-2015 \(^\text{14}\). Based on the integrated natural hazard risk-mapping in the atlas, the plan laid out the task of building a multi-level, integrated disaster relief reserve system for China. This aimed to link central, regional and local activities in order to meet the Chinese government’s commitment that people affected by disasters receive primary aid to sustain basic survival needs within twelve hours of a disaster striking.

At a local level, Shenzhen City, China’s first Special Economic Zone, used local knowledge and experience with the Atlas’ high-resolution maps of typhoon risk to develop its urban planning for disaster risk reduction policy. This policy supports the rapid urban development in the city whilst ensuring that buildings and infrastructure will be resilient to local hazards now and in the future.

The Atlases have also been used to inform disaster insurance policy and practice. For instance, the Chinese government’s agriculture insurance program \(^\text{15}\), launched in 2007, used the Atlas to inform regional crop risk assessment and premium determination. The Atlases are also widely used by domestic and international insurers, re-insurers and relevant stakeholders in the industry.

**Did it make a difference?**

In the past 30 years, China has promoted and implemented disaster risk reduction, using the scientific evidence communicated in the three Atlases and with increasing emphasis on evidence-based risk assessment and on regional variations \(^\text{16, 17}\). The resulting efforts have significantly increased the regional capacity in disaster prevention and risk mitigation. This work is believed to be a contributing factor to the general decrease in annual deaths from disasters, and the reduction in relative economic losses, seen in China in the last two decades (Figure 1) \(^\text{18}\).

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