FICHAS BIBLIOGRÁFICAS - ESTUDIOS PROBABILISTAS DE RIESGO EN COLOMBIA

Título: Seismic risk assessment of schools in the Andean Region in South America and Central America

Ficha No. 14

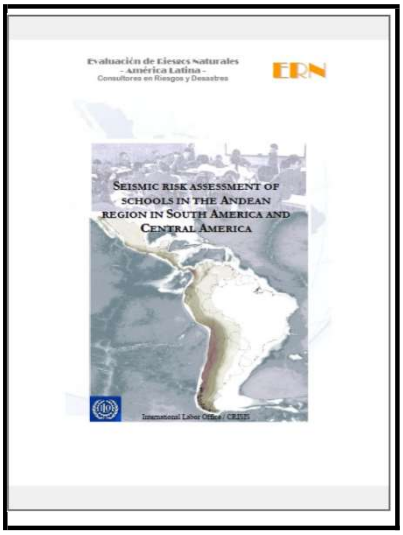
RESUMEN

During seismic disasters schools have been severely affected. In the Molise Earthquake in 2002, the San Giuliano school colapsed and killed most of the occupants (EERI 2003). In the Earthquake of Bingol, Turkey in 2003, more than the 48% of the schools suffered damages between moderate to severe. From 27 schools in the zone, 4 collapsed or resulted heavily damaged, 9 suffered moderate damages, 11 light damages and 3 remain without damages. In the school of Celtiksuyu, the collapse of the building killed 84 people, the majority, children (Ellul y D'Ayala 2003).

In Perú, in 2007, the earthquake of Pisco destroyed 18 educational facilities and affected 118 (EERI 2007). In China, after the earthquake of Sichuan more than 7,000 classrooms collapsed. In the provinces of Sichuan and Gansu, more than 12,000 and 6,500 schools were affected respectively (Reliefweb 2009). In the earthquake of Balochistan, Pakistan, 100 primary schools in the Ziarat District and 28 primary schools of the Pishin district were partially damaged. The academic activities were postponed during a week. This interruption affect near 20,000 children in Pishin and 3.845 in Ziarat (OCHA 2008c).

In the earthquake of Southern Sumatra in 2009, 241 schools were severe damaged, 175 suffered moderate damages and 87 suffered light damages; leaving without educational resources to more than 90,000 students (OCHA 2009). In the earthquake of Haiti in 2010, more than 97% of the schools in Port Principe were destroyed. The half of the public schools and the three main universities suffered severe damages (Fierro y Perry 2010). After the earthquake of Maule, Chile in 2010, from 4,432 educational facilities evaluated, it was found that the 63% may be functional, the 14% were partially operative and the 23% were evacuated (CERF 2010).

Those negative effects in the educational sector have motivated the development of global campaigns and local projects in order to reduce the seismic vulnerability of these facilities. In this sense, the risk assessment of educational buildings is necessary in order to establish a reference of



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PALABRAS CLAVE	Seismic hazard modeling, seismic risk assessment, exposure, seismic vulnerability, loss exceedance curve, Andean Region, Bogotá

COMPONENTES DE LA EVALUACIÓN

AMENAZA	1. Tipo de amenaza: Sismo 2. Métricas de intensidad: Peak Ground Acceleration (PGA) 3. Escala/resolución: Supranacional 4. Resultados: Mapas de amenaza integrada 5. Localización: Latinoamérica 6. Metodología: CRISIS 2007 (Ordaz et al. 2007) 7. Períodos de retorno (años): 475 años
VULNERABILIDAD	1. Tipo de vulnerabilidad: física 2. Metodología: CAPRA - Módulo de vulnerabilidad 3. Tipología estructural: Adobe, madera, mampostería confinada / reforzada / no reforzada, pórticos de concreto 4. Representación: Función de vulnerabilidad; Deriva máxima vs. Valor esperado de la pérdida / PGA vs. Valor esperado de la pérdida
EXPOSICIÓN	1. Tipo exposición: Edificaciones 2. Portafolios: Educación 5. Localización: Latinoamérica 4. Valor de reposición total: - 5. Área expuesta (m2): -
RESULTADOS DE RIESGO	1. Modelo utilizado: Comprehensive Approach for Probabilistic Risk Assessment (CAPRA) 2. Métricas de riesgo: Pérdida Anual Esperada (PAE), Pérdida Máxima Probable (PML) 3. PAE: 1.6 ‰ Resultados generales 4. PML: 50, 100, 250, 500, 1000 años de TR 5. Representación del riesgo: Curva de excedencia de pérdidas