

Earthquake Risk Transfer for Chile

Overview

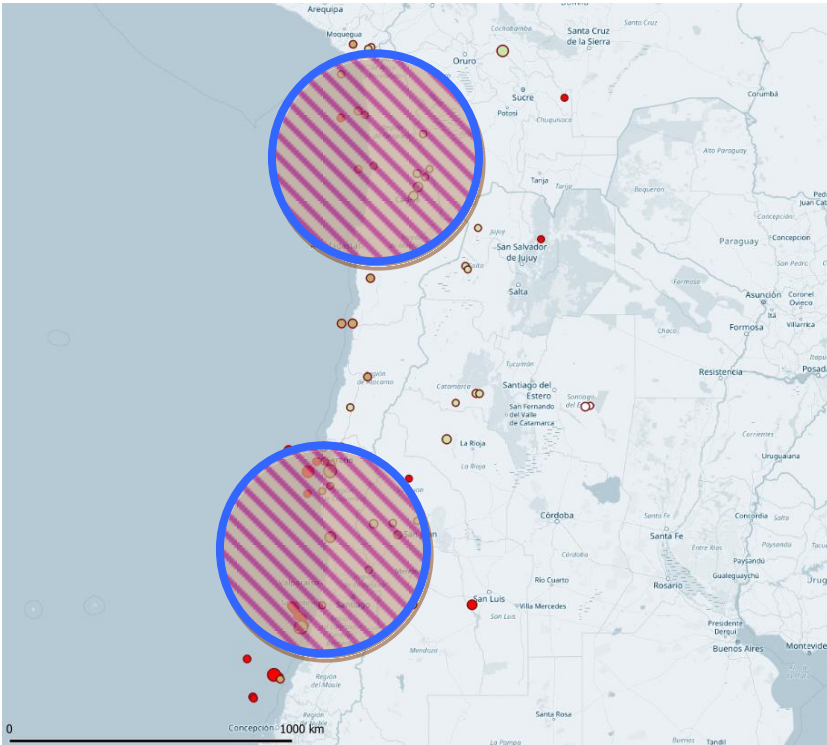


Figure 79. Chile undercover regions.

The Chilean Andes, as a characteristic tectonic and geomorphological region, is a perfect location to unravel the geologic nature of seismic hazards. The Chilean segment of the Nazca-South American subduction zone has experienced mega-earthquakes with Moment Magnitudes (M_w) >8.5 (e.g., M_w 9.5 Valdivia, 1960; M_w 8.8 Maule, 2010) and many large earthquakes with $M_w >7.5$, both with recurrence times of tens to hundreds of years. By contrast, crustal faults within the overriding South American plate commonly have longer recurrence times (thousands



of years) and are known to produce earthquakes with maximum Mw of 7.0 to 7.5. Subduction-type earthquakes are considered the principal seismic hazard in Chile, with the potential to cause significant damage to its population and economy. However crustal (non-subduction) earthquakes can also cause great destruction at a local scale, because of their shallower hypocentral depth. Nevertheless, nature, timing and slip rates of crustal seismic sources in the Chilean Andes remain poorly constrained (Santibáñez, et al., 2019). Chile is one of the 5 regions that Earling pilot tests launched there.

The north and center of Chile received accurate EPAs, which means citizens in the specified regions can prepare for most of the significant events.

EPA Effect on Estimated Maximum Loss

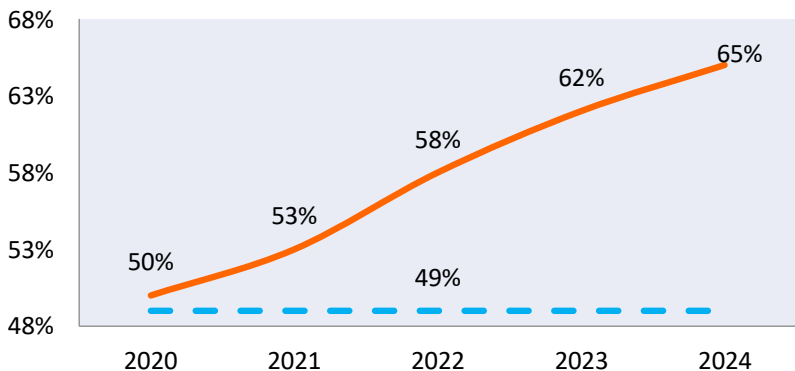


Figure 80. EPA effect on Chile earthquake insurance penetration rate (OECD, 2018). Considering the recent significant earthquakes that affected Chile, the earthquake insurance penetration rate is very low. EPAs campaigns that launch before major events can prepare citizens for a probable event, but in the other, it drastically increases insurances risk in the worst time through adding new high-risk customers with their risk is in high.



EPA Effect on Estimated Maximum Loss in Chile

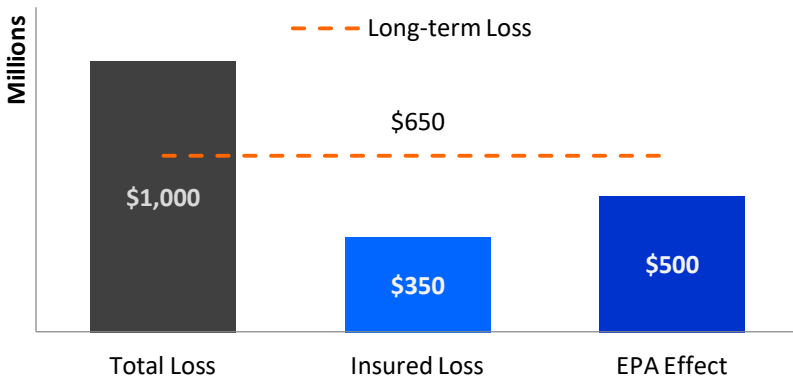


Figure 81. EPA effect on the 16 Sep 2015 Chile earthquake (SwissRe, 2016)

EPA Effect on Probable Maximum Loss

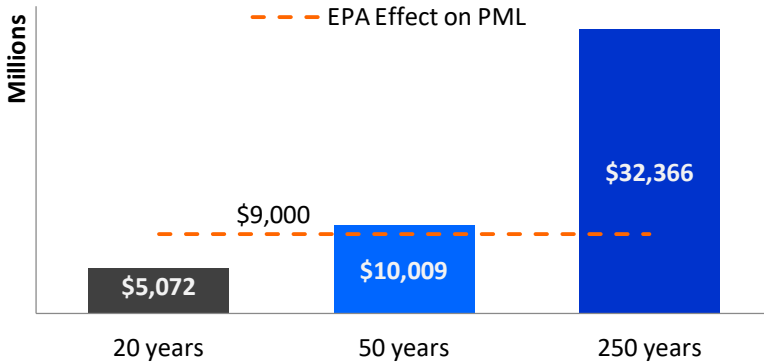


Figure 82. PML - Mean return period in years. Chile Average Annual Loss is about \$2,396 million (Chile Disaster & Risk Profile, 2014). EPAs that are not supported by a First Notice increase insurance loss.



Chile recent largest earthquakes

Place	Date	Magnitude	Severity
Maule	29-Sep-19	6.8	VI
Los Lagos	26-Sep-19	6.1	IV
Coquimbo	20-Jan-19	6.7	VIII
Valparaíso	24-Apr-17	6.9	VII
Quellón	25-Dec-16	7.6	VIII
Illapel, Offshore Coquimbo	16-Sep-15	8.3	VIII
Easter Island	08-Oct-14	7.0	I
Iquique	02-Apr-14	7.7	VIII
Iquique Offshore Tarapacá	01-Apr-14	8.2	VIII
Iquique	01-Apr-14	7.5	VIII
Iquique	01-Apr-14	7.0	VI
Iquique, Offshore Tarapacá	16-Mar-14	7.0	VI
Talca	25-Mar-12	7.1	VIII
Araucanía	02-Jan-11	7.1	VI
Pichilemu	11-Mar-10	6.9	VII
Offshore Maule/Biobío	27-Feb-10	8.8	IX
Tocopilla	14-Nov-07	7.7	VIII
Aisén Fjord	21-Apr-07	6.2	VII
Tarapacá	13-Jun-05	7.8	VII

