Appendix A1 – Variables used in the text

Variable	Description	Equation introduced
A_L	Area of a landslide.	4.1
A_{LT}	Total area of landslides in an area or in an inventory.	4.2
A_M	Area of a mapping or terrain unit.	4.1
AVR	Average vehicle risk index, a function of the length of the hazard zone (L_H), of the percentage of a vehicle that at any time can be expected to be within the hazard zone (V_H), the average daily traffic, and the posted speed limit.	8.15
C	Consequence, the effect of a hazard to an element at risk, given some kind of temporal effect.	8.4
c_{RF}	Rock fall count, obtained as output of the software STONE and used to determine rock fall hazard (H_{RF}).	7.6
D_L	Landslide density, the frequency, proportion or percentage of landslide area.	4.1
E	Mapping error index, measures the degree of mismatch between two inventory maps.	4.2
H_L	Landslide hazard determined at the basin scale. It is the probability of occurrence within a specified period and within a given area of a landslide of a given magnitude.	7.1
H_L	Landslide hazard determined at the national scale. It is the probability of the consequences of a landslide exceeding one casualty within a specified period and within a given area.	7.4
H_L	Landslide hazard determined at the site scale. Depends on the frequency of landslide movements (F_L) and on the landslide intensity (I_L).	8.17
h_{RF}	Rock fall flying height, obtained as output of the software STONE and used to determine rock fall hazard (H_{RF}).	7.6
H_{RF}	Rock fall hazard, a linear combination of rock fall count (c_{RF}), maximum rock fall flying height (h_{RF}), and maximum rock fall velocity (v_{RF}).	7.6
I_L	Landslide intensity, a function of landslide volume (v_L) and of the landslide expected velocity (s_L)	8.16

Variable	Description	Equation introduced
M	Mapping matching index, measures the degree of match between two inventory maps.	4.3
M_E	Earthquake magnitude.	5.5
m_L	Magnitude of a landslide event, with $m_L = log N_{LT}$	5.6
N_F	Number of fatalities produced by a landslide event.	8.10
$N_{CL} (\geq A_L)$	Cumulative number of landslides with area greater or equal to A_L.	5.2
N_{LT}	Total number of landslides in an area or an inventory.	5.2
$N(t)$	Total number of landslides or landslide events in a period t.	4.4
p	Estimated probability of a landslide event (in time t).	4.8
$P(A_L)$	Probability density of landslide area. The frequency density, $f(A_L)$ divided by the total number of landslides in a substantially complete inventory, N_{LT}.	5.3
$P(C)$	Probability of the consequences of a landslide event, measured by the number of fatalities caused by the event.	7.4
$P(N_L)$	Exceedance probability of occurrence of landslide events during time, estimated using a Poisson or binomial distribution model.	4.5
$P(A\|B)$	The probability of an hypothesis on some event A occurring conditioned by the fact that event B has occurred (Bayes theorem).	6.5
$P(N_F)$	The probability that N_F fatalities will occur in a single random landslide event.	8.10
$P(S\|H)$	The probability that there will be a spatial effect, given a specific harmful landslide.	8.4
$P(T\|S)$	The probability that there will be a temporal effect, given that there is a spatial effect.	8.4
R_L	Rate or landslide occurrence, from an historical catalogue of landslide events.	4.4
R_S	Specific landslide risk, in QLRA the expected degree of loss due to a landslide.	8.6
R_S	Specific landslide risk, in qLRA, depends on the interaction between landslide hazard (H_L) and the expected vulnerability to the elements at risk (V_L).	8.18
R_T	Total landslide risk, the expected number of lives lost, person injured, damage to property, or disruption of economic activity due to a landslide, or the risk to all specific elements from all specific hazardous affecting landslides.	8.8
S	Landslide susceptibility, the probability of spatial landslide occurrence.	6.9
t	Time.	4.5
W_L	Vulnerability, the degree of loss to a given element, or a set of elements, at risk resulting from the occurrence of a landslide of given magnitude.	8.2
v_{RF}	Rock fall velocity, obtained as output of the software STONE and used to determine rock fall hazard (H_{RF}).	7.6
ζ	The Riemann Zeta function.	8.10
λ	The estimated average rate of occurrence of landslides, in a period t; $\lambda = 1/\mu$.	4.6

Variable	Description	Equation introduced
μ	Estimated mean recurrence interval between successive landslide events, in a period t; $\mu = 1/\lambda$ and $\mu = 1/p$.	4.6
$\Gamma(\xi)$	Gamma function, $\Gamma(\xi) = \int_{0}^{\infty} y^{\xi-1} \, exp(-y) \, dy, \xi > 0$	5.4